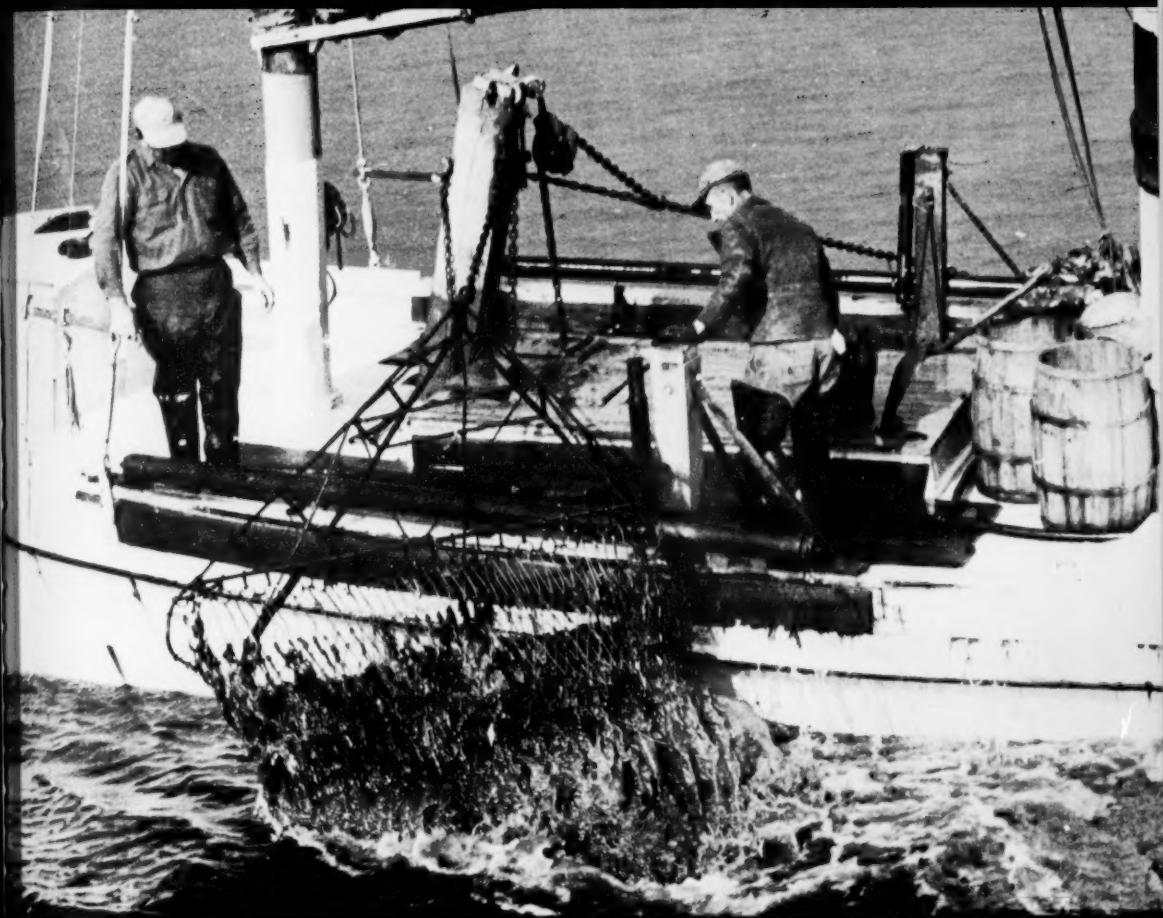


Div. of Fishery

# COMMERCIAL FISHERIES REVIEW

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**UNITED STATES DEPARTMENT OF THE INTERIOR**  
**Fish and Wildlife Service**  
**Bureau of Commercial Fisheries**  
**Washington, D. C.**

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# COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries  
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor  
G. A. Albano, H. M. Bearse, and H. Beasley, Assistant Editors

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5/31/68

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## MECHANIZING THE BLUE CRAB INDUSTRY

### Part III - Strengthening the Industry's Economic Position

By Charles F. Lee\*, George M. Knobl, Jr.\*\*\*, and Emmett F. Deady\*\*\*

#### ABSTRACT

Because the production of meat from the blue crab has required a large amount of hand labor, the recent amendment of the Fair Labor Standards Act resulted in hardship for the blue crab industry in that compliance with the minimum wage requirement narrowed the spread between cost and selling price. This article suggests a number of measures for strengthening the economic position of the industry by indicating how the spread between cost and price can be widened.

These suggestions involve mechanization of the industry, developing additional markets for the product, and increasing the supply of raw crabs.

#### INTRODUCTION

The blue crab industry of the South Atlantic and Gulf Coast has faced economic disaster as a result of its being included under a revision of the Fair Labor Standards Act, effective September 3, 1961. In fact, a number of plants were shut down during the first year that this revision of the Act was in effect. Picking the meat from the crab in the production of blue crab meat involves a large amount of hand labor. Prior to September 1961, crab pickers were paid on a piece-work basis, and only the faster pickers were able to earn a dollar or more per hour. Because many of the pickers could not work fast enough to earn this minimum wage required by the Act and because industry profits were already low even under the piecework system with many plants operating marginally--the packers were greatly concerned over the effect of the resulting increase in cost of production.

When funds were appropriated by Congress to provide relief for the industry, a contract was granted to a research and development firm to conduct the necessary investigations into how the mechanization could be accomplished.

The first step the contractor took was to survey the industry to determine what machines are needed and also what changes in the operation of the industry might be helpful to it in the interim period while the desired machines are being developed.

The survey substantiated the opinion that, even aside from the effect of the Fair Labor Standards Act, the crab industry as a whole was in serious economic trouble. From the survey it became clear that new machinery and methods must do more than merely offset the immediate increased cost of labor resulting from the amendment to the Fair Labor Standards Act. The survey indicated that the blue crab industry, even for some time before being included under the Act, was not particularly geared to growth and profit and, indeed, had at times operated below actual cost. In short, survival of the industry in its present form was in danger, minimum wage or no.

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As a result of the contractor's survey, he made three major suggestions, as follows:

1. That the industry needs a "family" of four machines to provide the flexibility required because of the great differences in plant size and economic health. The purpose of the first article in the present series was to report the contractor's recommendations concerning this "family" (Lee, Knobl, and Deady, 1963).
2. That there are certain modifications in plant practice that the individual operator can make to enable his plant to remain in business during the interim period required for mechanization. The purpose of the second article (Lee, Knobl, Abernethy, and Deady, 1963) in the present series was to report the contractor's recommendations concerning these modifications.
3. That in addition to mechanization, other steps are needed in order to strengthen the industry's economic position. The purpose of the present paper is to report the contractor's recommendations for industry action by which it might strengthen itself economically.

The industry's current difficulty is due to a lack of spread between cost and selling price, which leaves little room for profit. The solution to the problem is, of course, to lower the cost by introducing economies in production and/or to improve the price structure by creating greater demand for the industry's products. Accordingly, in the present article, we discuss the following three main topics:

1. The lack of spread between production cost and selling price.
2. The possibility of lowering the cost by introducing operating economies (mainly through mechanization).
3. The possibility of improving the price structure by creating greater demand.

#### LACK OF SPREAD BETWEEN COST AND SELLING PRICE

Using average yield data and an average price for raw crabs based on the assumption that two-thirds of the catch is purchased during the summer season and that one-third is purchased at a higher price during the off season, we computed that the average cost of the raw crabs yielding 1 pound of crab meat (lump, flake, and claw in normal proportions) was 29 cents. The average picking cost, based on plant records and Labor Department surveys, was 27 cents per pound<sup>1/</sup>. Costs of cooking, cans, ice, and utilities added another 28 cents, making the average direct cost of production of 1 pound of crab meat 84 cents. The average sale price was computed as shown in table.

From these figures, it is evident that industrywide, on an average year-round basis, the packer has a margin of only 16 cents per pound above direct costs to pay for transportation, losses from spoilage, salary costs of management, accounting, office costs (telephone and supplies, etc.) and cover such items as depreciation, taxes, and insurance. Only a few of the plants had records that made it possible to determine these costs accurately. Records of one plant, however, indicated that these indirect costs totaled 15 percent, or in this case 15 cents.

Although it is, perhaps, unjustifiable to speak of the crab industry in terms of an "average" plant and "average" costs, yet the estimate of a net profit of 1 cent per pound is certain-

<sup>1/</sup>These data were obtained during the survey period, October 1961-January 1962, and may have changed since that time.

Average Price to the Packer of a Pound of Crab Meat Based on the Wholesale Price of Lump Meat, Flake Meat, and Claw Meat in the Relative Proportion Obtained from the Whole Crab			
Style of Meat	Average Price of Meat	Average Relative Yield	Average Price of Meat
	Dollar Per Pound	Percent	Dollars Per Proportionate Part of a Pound
Lump	1.40	28	0.39
Flake	0.90	52	0.47
Claw	0.70	20	0.14
Total . . . . .		100	1.00

ly an indication of trouble in many plants. It is obvious that there is not sufficient spread between costs and selling price to sustain the industry, even at the present \$1.00 per hour minimum wage, to say nothing of the \$1.15 and the \$1.25 per hour wage with which it will be faced in September 1964 and September 1965, respectively.

Though it would be desirable to have a more extensive inspection of industry cost records so as to evaluate the range of spread between cost and selling price more precisely, the foregoing data are sufficient to indicate the critical situation in which the industry now finds itself.

#### POSSIBILITY FOR LOWERING COST OF PRODUCTION BY INTRODUCING OPERATING ECONOMIES

In this section, we consider the major factors in the cost of production, which will show that one of the major factors is the cost of labor. We then consider the economic value of mechanization.

MAJOR FACTORS IN THE COST OF PRODUCTION: The cost of production varies principally with:

1. Seasonal change in cost of raw crabs. This cost ranges from  $3\frac{1}{2}$  to 9 cents per pound.
2. Cost of picking labor. At \$1.00 per hour, pickers are paid from 23 to 38 cents per pound of crab meat. Experienced pickers (the main labor force) are scarce, but there are almost no trainee or recruiting programs. A large proportion of the workers are over 50 years of age.
3. Yield of meat. The average yield may range from 11-16 pounds of meat per 100 pounds of raw crabs. During months of high production when crabs are cheapest, the yield is highest; and vice versa.
4. Proportion of lump, flake, and claw meat obtained per pound. The price per pound of lump meat is about twice that of claw meat and flake meat, so that the proportional yield of lump meat is a major factor in determining profit margin.
5. Cost of shipment of crab meat to market (and of raw crabs to plant). The cost of shipping the meat ranges from 3 to 9 cents per pound.

One of the major factors in the foregoing list is the cost of labor, especially under the requirements of the amendment to the Fair Labor Standards Act. This law sets interim minimum wages of \$1.00 per hour until September 3, 1964. It then sets interim minimum wages of \$1.15 per hour--the wage that is to prevail until September 3, 1965. At that time the industry must pay a minimum of \$1.25 per hour. Some uncertainty as to these \$1.00 and \$1.15 interim rates exists, however, because owing to their nature, various crab-packing operations may have been brought under an "enterprise" classification. This classification carried with it an immediate \$1.15 minimum that was raised to \$1.25 on September 3, 1963.

To assist the packers in adjusting to the new minimum wages, the Department of Labor at first permitted handicapped-worker certificates for those elderly pickers who are below average producers as well as for those crab pickers who are handicapped for the job. However, these provisions for paying handicapped workers at less than the minimum wage are being eliminated in several steps, resulting in a continuing increase in labor costs even prior to September 3, 1964.

ECONOMIC VALUE OF MECHANIZATION: Since the survey showed that it was feasible to reduce the cost of labor by mechanization, it was desirable to estimate what savings would potentially result. This estimate would serve as a guide to the amount of money that the individual plants might be expected to invest in mechanization, which in turn would determine



the size and complexity of the machines to be developed. In the case of any contemplated machine, it is, of course, difficult to arrive at its economic value. At best, such an estimate must be based on an "educated guess." Making such an estimate requires estimating values for such factors as original costs, interest rates, efficiency, power requirements, maintenance problems, and repair costs. In the case of the blue crab industry--which is characterized by a wide variety of economic, geographic, and other differences--the problems are compounded by the many variations possible.

Based, however, on the probable elimination of 90 percent of the picking labor when the whole family of four machines is used (10 percent of the best workers could maintain and operate the new equipment), direct savings of about \$20,000 per year might be anticipated for a typical plant having some 25 pickers when they are being paid \$1.00 per hour. If savings were figured on the basis of \$1.25 hourly wage, a correspondingly larger saving would be realized. Cost of power, maintenance, and repairs would reduce the estimated savings, but possibly \$15,000 per year would still be available for financing of mechanization, including original costs of the machines, interest, and depreciation.

The most recent development resulting from the contractor's investigations has been the design of a novel and basically simple machine for cleaning and debacking the crabs. This machine is designed to handle about one crab per second and will probably cost about \$2,000 per unit. Moreover, the machine has been designed with the idea of attaching a second relatively simple machine for removal of the lump meat. The contractor believes that in combination, these two machines alone will enable the industry to operate at a profit with the \$1.25 wage.

Profits from the addition of the claw- and flake-picking machines would support much needed cooperative exploratory studies and development of new gear for catching crabs. With the successful mechanization of the cleaning and picking operations, the future government-industry program should include development of rapid pasteurization methods, and continuing biological studies of the resource, exploratory fishing and gear studies. It is reasonable to expect that the next 5 to 10 years will see a completely new crab industry with a sound economic base for the first time in many years.

#### POSSIBILITY FOR IMPROVING THE PRICE STRUCTURE BY CREATING GREATER DEMAND

To make concrete proposals for improving the price structure, the contractor conducted a brief marketing study to obtain a better understanding of the industry's marketing problem. With this factual background, he then made a number of specific recommendations.

The main topics discussed in this section of the article therefore are:

1. Marketing study.
2. Proposed marketing program.

**MARKETING PROBLEMS:** The initial survey of the industry indicated that one serious block to progress is the present pattern of marketing. A limited survey therefore was made to learn more of the nature of the problem. In this survey, the Baltimore crab market was selected for study, not because it is typical, but rather because it is the largest crab market in the country and is the main sales outlet for a great many of the smaller plants. This survey revealed that:

1. With the exception of some hotel and restaurant managers who appreciate the benefit of the longer shelf life, pasteurized crab meat does not sell nearly as readily as does the fresh meat. Some prejudice against pasteurization apparently resulted from use of this process to hold spoiling, over-age meat during the early trial-period of pasteurization. Packers also object to the extra can and storage costs and the inventory tied up in storage. However, the



short (6-10 days from picking) shelf life of the fresh meat leads to considerable loss at the retail level, which loss reverts to the crab meat packer.

2. Quality of pack is variable from picker to picker. The cans are not coded to identify the pickers for the packs of low quality. Standardization and control of quality thus are badly needed.
3. Dredged crabs, the only crabs available locally during the winter in Chesapeake Bay, are the source of another factor that reduces quality--sand in the meat. Crab meat shipped from Florida and Louisiana during this period has a price advantage because the meat is cleaner. In the South, crabs are taken in crab pots (traps) the year around.
4. Most of the crab meat coming into Baltimore is bought by commission merchants. When the packer ships the meat, he often does not know what price he will receive for his product--or even that it will be sold.

**PROPOSED MARKETING PROGRAM:** Among the packers there exists no well-organized pattern of cooperation to solve such common problems as uniformity of product, product specifications, marketing, and advertising.

Most of the packers attempt to sell their products in long-established markets. There seems to have been no concerted effort by the industry to develop new markets.

Accordingly, the contractor made a number of specific proposals for expanding existing markets. However, it was evident that if the market for blue crab is expanded, the problem of supply of raw crabs may become critical. He, therefore, also made a number of suggestions relating to the supply. An increased supply of raw crabs not only would permit an expanded market and thereby strengthen the price structure but would also help stabilize production costs. Stabilization of the price of the raw crabs will benefit both the fishermen and the processors. The contractor's suggestions regarding the expansion of the market for the product and the expansion of the supply of the raw crabs are discussed in the following subsections.

**Expansion of the Market:** A marketing program will require an industrywide cooperative effort. Emphasis should be placed on new processes that will provide more stable market forms of the product as well as greater control of quality. Pasteurization should be perfected to the point where the product is entirely acceptable by the market for fresh crab meat and to the point where most of the pack can be so treated. Greater effort should also be devoted to expanding the production of frozen specialty products.

Only when stable products of uniform quality are available will it be practical to extend the market area to include the smaller towns and inland regions that are not in the present pattern of distribution of fresh, chilled crab meat. There seems little doubt that the current marketing pattern had its origin in the very short shelf life of the chilled product. A strong marketing program is needed to change this pattern. The development of a stable market would help greatly to stabilize the price of crab meat, and a stabilized price would increase industry profits by enabling management to establish a more even schedule of production.

**Expansion of the Supply of Raw Crabs:** The conversion to general use of pasteurization and efforts to expand the market for crab meat into new regions should be preceded by, and later be concurrent with, a program to improve the supply of live crabs. Although in areas such as Chesapeake Bay, there are indications that the harvest of live crabs is already near its maximum yield, this condition is not believed to be representative of the potential yield of blue crabs in all other parts of its range. The production of the South Atlantic and Gulf Coast States, for example, has been approximately doubled in the past decade, and this increase has occurred without any really coordinated industry effort.

There are still large regions within the range of blue crabs where there are very few or no crab plants. Exploration of these new shore areas offers an opportunity to increase pro-

uction. New gear for catching crabs, such as tangle nets or trawls that would permit exploitation of possible deeper-water crab populations, needs study. Crab fishermen often make but little effort to follow even local shifts in the crab populations that occur due to temporary changes in salinity in the estuarine areas where the crabs are most generally concentrated. Efforts of these types to expand the fishery for blue crabs should be accompanied by biological studies, with the objective of determining the maximum sustained yield of the fishery from the major production areas and the factors that influence the annual yield.

### CONCLUSIONS

Briefly stated, the needs of the crab industry to place it on a solid economic base are threefold:

1. The cost of production must be reduced. It is believed that the mechanization program will achieve this objective.
2. A strong, aggressive, and sustained marketing effort by the industry is required to create a stabilized and, eventually, an expanded demand for the product.
3. A concerted effort is needed to expand the catch of live crabs and to minimize the seasonal and annual fluctuation in the catch.

### SUMMARY

A survey of the blue crab industry indicated that even before the amended Fair Labor Standards Act, many crab plants operated with little profit. Mechanization therefore will have to do more than simply enable plants to pay the minimum hourly wage required by the Act. Eventually mechanization must also ensure a sufficient margin of profit to permit a cooperative attack by the blue crab industry on such basic problems as limited markets, need to develop modern products, lack of knowledge of the resource, and need for modern harvesting and processing methods.

Direct cost of production varies with changes in the cost of raw crabs, quality of crabs, cost of picking labor, and cost of cans, ice, cooking, etc. The average direct cost of producing a pound of crab meat was calculated to be \$0.84, for which the average sale price was calculated to be \$1.00. The 16 cents difference is barely adequate to pay for shipping and indirect costs, indicating that many plants are already operating at the break-even point or at a loss.

Present marketing practices do not contribute to a stable economic structure for the industry. The quality of the meat is highly variable, and the short shelf life of chilled crab meat causes excessive losses. Yet the pasteurized product, which has a longer shelf life, has not been sufficiently "sold" to either the packer or the potential customer. There has been little cooperative effort by the industry to develop a wider market.

Estimated savings that are anticipated to result from mechanization of a plant employing about 25 pickers would be about \$15,000 per year at the \$1.00 hourly wage. Recent developments in the mechanization studies indicate that the price of the machines may be less than early estimates as the contractor has now been able to simplify his design concepts of both a debacking machine and a lump-picking machine. As the result of this simplification and consequent reduction in the potential cost of mechanization, even the small plants should eventually find complete mechanization economically feasible.

Three conclusions were derived from this study: (1) the cost of producing crab meat needs to be reduced by means of mechanization, (2) a strong marketing effort by the industry is needed, and (3) the catch of crabs should be expanded and the fluctuation in catch minimized.

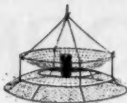
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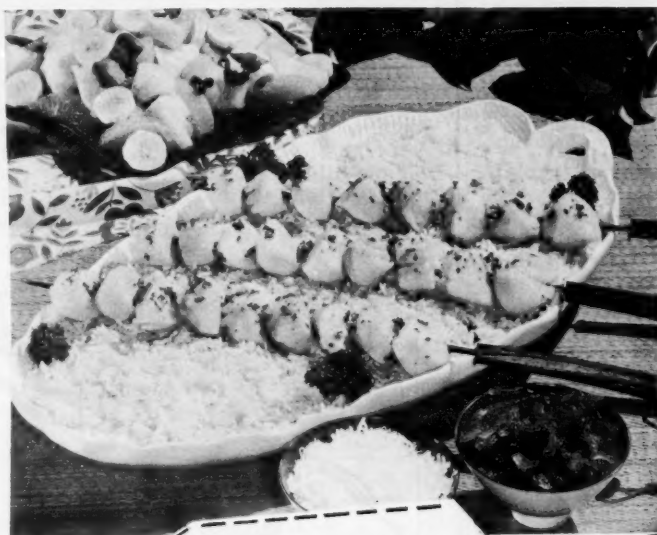
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## CURRIED SCALLOPS WITH RICE PILAF



Flavorful scallops from cold New England waters blend readily with savory curry to capture compliments for the imaginative home-maker. Skewered scallops, magically marinated, and broiled until brown, will bring the charm of the Middle East to your table to appease apathetic appetites.

1 1/2 pounds scallops, fresh or frozen  
1/2 cup melted fat or oil  
1/2 cup cider or apple juice  
2 tablespoons chopped parsley

1 teaspoon curry powder  
1 teaspoon salt  
Rice Pilaf

Thaw frozen scallops. Rinse with cold water to remove any shell particles. Cut large scallops in half. Place scallops in a shallow baking dish. Combine remaining ingredients except Rice Pilaf; mix thoroughly. Pour sauce over scallops and let stand for 30 minutes, stirring occasionally. Remove scallops, reserving sauce. Place scallops on 6 skewers, approximately 7 inches each. Place on a well-greased broiler pan. Brush with sauce. Broil about 3 inches from source of heat for 3 to 4 minutes. Turn carefully and brush with remaining sauce. Broil 3 to 4 minutes longer. Serve over Rice Pilaf. Serves 6.

## RICE PILAF

1 cup uncooked rice  
2 tablespoons melted fat or oil  
1 package (1-3/8 or 1 1/2 ounces) onion soup mix

2 1/2 cups boiling water  
1/4 cup chopped parsley

Cook rice in fat until golden brown, stirring occasionally. Add soup mix and water, stir. Cover and bring to the boiling point. Reduce heat and simmer for 30 to 35 minutes or until liquid is absorbed. Add parsley. Serves 6.

--From Fisheries Marketing Bulletin: "Protein Treasure from the Seven Seas."  
Issued by the National Marketing Services Office,  
U. S. Bureau of Commercial Fisheries, Chicago 5, Ill.

# TRENDS AND DEVELOPMENTS

## Alaska

### BRISTOL BAY AREA OFFICE SHIFTED TO TOWN OF KING SALMON:

The location of Alaska's commercial fisheries headquarters office for the Bristol Bay area at King Salmon on a year-round basis was announced by the Commissioner of the Alaska Department of Fish and Game on November 1, 1963. Formerly, this office was located at King Salmon during the fishing season and at Dillingham, Alaska, for the remainder of the year.

The reason for the change is due to the fact that King Salmon is more centrally located to the major fishing areas, and living accommodations are now available there for the area biologist. Economy and efficiency will be best served by making King Salmon a permanent station and the area headquarters office.

Two of the four biologists assigned to the Bristol Bay area were to remain at Dillingham.

Kenneth R. Middleton, formerly an assistant biologist in the Bristol Bay area, has been named Area Management Biologist. Middleton graduated from the University of California and worked 18 months for the California Department of Fish and Game before joining the Alaska Department of Fish and Game in 1960.



## California

### ABUNDANCE AND CONDITION OF DUNGENESS CRABS SURVEYED PRIOR TO OPEN SEASON:

M/V "N. B. Scofield" Cruise 63-S-7-Crab (October 5-31, 1963): To determine the preseason abundance and condition of legal and sublegal Dungeness crabs (*Cancer*

*magister*) were the objectives of this cruise by the California Department of Fish and Game research vessel N. B. Scofield. The area surveyed was in the coastal waters off San Francisco from the Russian River to Point Montara.

Sampling stations were selected randomly from the crab-fishing areas between Point Montara and the Russian River. Commercial crab traps were baited with squid and rockfish and allowed to fish overnight at each of the 71 stations visited.



A total of 5,258 crabs were taken in the traps, 3,022 legal males, 2,077 sublegal males, and 159 females. The average legal catch per trap of 4.3 crabs was only slightly higher than the 4.1 legal crabs per trap taken in 1962. The sublegal catch of 2.93 per trap was down from 1962.

The best catches were north of the San Francisco Lightship in 18 and 19 fathoms of water and north of Double Point in 12 to 27 fathoms of water. Good catches were also made west of Point Montara in 16 to 26 fathoms of water.

The mean shoulder width of the crabs was 174 millimeters (6.8 inches), about 3 millimeters (about  $\frac{1}{8}$  inch) larger than the mean



shoulder width of the crabs in the comparable survey made in 1962.

According to the survey, it is believed the catch for the 1963/64 season will be 1.4 million pounds with estimates ranging from 1.1 to 1.6 million pounds. The increase in average size was figured into the poundage estimate for the 1963/64 season.

Note: See *Commercial Fisheries Review*, February 1963 p. 21.



## Cans--Shipments for Fishery Products, January-September 1963

The amount of steel and aluminum consumed to make cans shipped to fish- and shell-fish canning plants during January-September 1963 was down 3.6 percent from that used during the same period in 1962. The decline was due to smaller shipments to the Eastern and Western Areas which was only partly offset by larger shipments to the Southern Area. The pack of salmon and tuna was down on the West Coast. A smaller pack of Maine sardines accounted for the decline in shipments to the East Coast. On the Gulf Coast, however, there was a considerable increase in the pack of shrimp.



## Federal Purchases of Fishery Products

### DEPARTMENT OF DEFENSE PURCHASES, JULY 1963:

**Fresh and Frozen:** For the use of the Armed Forces under the Department of Defense, less fresh and frozen fishery products were purchased in July 1963 by the Defense Subsistence Supply Centers than in the previous month. The decline was 3.5 percent in quantity and 7.7 percent in value.

Compared with the same month a year earlier, purchases in July 1963 were down 5.2



percent in quantity and 24.6 percent in value. Purchases this July included 540,629 pounds of shrimp, 392,098 pounds of ocean perch fillets, 293,486 pounds of scallops, 170,006 pounds of haddock fillets, 166,124 pounds of flounder fillets, 118,429 pounds of oysters, and 86,348 pounds of halibut, as well as substantial quantities of cod fillets, sole fillets, and clams. Prices paid for fresh and frozen fishery products by the Department of Defense in July 1963 averaged 50.9 cents a pound, 2.3 cents a pound less than in the previous month, and 13.1 cents a pound less than in the same month of 1962.

U. S. Domestic Shipments of Metal Cans for Fishery Products, January-September 1963 and 1962  
(Base Boxes of Metal Consumed in the Manufacture of Cans for Fishery Products)

Receiving Area	First Quarter		Second Quarter		Third Quarter		Jan. -Sept.	
	1963	1962	1963	1962	1963	1962	1963	1962
East 1/2	155,814	158,531	215,924	189,556	276,572	341,193	648,310	689,280
Southern	21,010	13,403	38,197	32,668	34,986	21,765	94,193	67,836
North Central	29	63	5	29	8	22	42	114
West 2/2	381,735	414,199	629,376	701,831	594,561	562,140	1,605,672	1,678,170
Total all areas	558,588	586,196	883,502	924,084	906,127	925,120	2,348,217	2,435,400

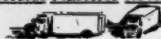
1/Includes Puerto Rico.

2/Includes Alaska and Hawaii.

In January-September 1963, shipments to the Pacific or Western Area accounted for 68.4 percent of total shipments; shipments to the Eastern Area accounted for 27.6 percent; and shipments to the Southern Area accounted for most of the remaining 4.0 percent. Most of the fish-canning facilities are located in the Pacific Area.

Notes: (1) Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" size. The tonnage figures for steel (tinplate) cans are derived by use of the factor 21.8 base boxes per short ton of steel. The use of aluminum cans for packing fishery products is small.

(2) See *Commercial Fisheries Review*, Dec. 1963 p. 24.



During the first 7 months of 1963, purchases were down 1.5 percent in quantity and 3.8 percent in value from those in the same period of the previous year.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, July 1963 with Comparisons

QUANTITY				VALUE			
July	Jan. - July	July	Jan. - July	July	Jan. - July	July	Jan. - July
1963	1962	1963	1962	1963	1962	1963	1962
..... (1,000 Lbs.) .....				..... (\$1,000) .....			
1,953	2,061	13,831	14,034	995	1,319	7,768	18,081

Canned: Canned tuna was the principal canned fishery product purchased for use of

Table 2 - Canned Fishery Products Purchased by  
Defense Subsistence Supply Centers,  
July 1963 with Comparisons

Product	QUANTITY				VALUE			
	July		Jan.-July		July		Jan.-July	
	1963	1962	1963	1962	1963	1962	1963	1962
	..(1,000 Lbs.)				..(\$1,000)			
Tuna	174	1	2,064	3,708	81	1/	1,007	2,062
Salmon	2	1	18	1,016	2	1/	12	638
Sardine	24	3	321	53	9	2	131	27

1/Less than \$500.

the Armed Forces in July 1963. Total purchases of canned tuna, salmon, and sardines in the first 7 months of 1963 were down 49.7 percent in quantity and 57.8 percent in value from those in the same period of the previous year. The decline was due to lower purchases of canned tuna and salmon.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

(2) See *Commercial Fisheries Review*, Nov. 1963 p. 28.



## Fish Farming

### GEAR TESTED FOR HARVESTING FISH FROM RICE FARM PONDS:

Preliminary trials of a specific commercial type haul seine and seine winch were successfully completed recently in a 36-acre flooded rice field pond near Dumas, Ark. These trials were part of the U.S. Bureau of Commercial Fisheries program to assist the fish-farming industry to improve the methods of harvesting farm pond-reared fish. Catches ranged up to 1,200 pounds of buffalo-fish and 20 catfish per haul. Over 223 buffalo-fish, averaging some 5 pounds each, were held alive for two days in a portable water tank to simulate holding the fish for market.

It is felt that with additional refinements, the haul seine and seine winch could be a highly efficient and labor-saving harvesting device particularly for ponds and reservoirs that do not have excessive numbers of snags or similar bottom obstructions. Other advantages of the haul seine gear are: (1) it is unnecessary to lower the pond water level to harvest the fish; and (2) the fish could be obtained for market on shorter notice than with the techniques presently used in the farm pond fishery.



## Fish Larvae

### FIRST LARVAL FISH BIOLOGY CONFERENCE HELD IN CALIFORNIA:

Tiny and transparent, the vulnerable young or larvae of most important food fishes, such as sardine, herring, tuna, and mackerel are at the mercy of the ocean currents and fair game for predators. These fragile creatures are nevertheless considered by fisheries scientists to be an index of the productivity of the species and an important key to evaluation of any commercial fishery.

At the University of California Conference Center at Lake Arrowhead, October 28-30, 1963, a group of scientists from Scotland, England, Austria, Germany, and the United States gathered to discuss progress in the comparatively unexplored field of larval fish biology. This symposium, sponsored by the U.S. Bureau of Commercial Fisheries Biological Laboratory, La Jolla, Calif., was the highlight of the 1963 California Cooperative Oceanic Fisheries Investigations Conference and attracted researchers from other Bureau laboratories and local colleges and universities.

Contributing papers to the symposium were Mr. F. G. T. Holliday of the University of Aberdeen on the physiology of marine fish larvae; Mr. J. H. S. Blaxter, Marine Laboratory, Aberdeen, on the feeding of herring larvae; Dr. G. Hempel of the University of Hamburg on larval survival; Dr. W. Einsele, Director of the Austrian Freshwater Commercial Fisheries Laboratory at Scharfling on the problems of survival and rearing of European fresh-water fishes; and Mr. James Shelbourne of Lowestoft, England, on the rearing of marine fish for commercial purposes. The United States was represented by Drs. E. H. Ahlstrom, an authority on larval fish taxonomy; Reuben Lasker, who has conducted basic physiological studies on Pacific sardine embryos and larvae; and G. O. Schumann, on behavior of larvae, all from the Bureau's Biological Laboratory at La Jolla; Horst Schwassmann, neuroanatomist of the University of California at Los Angeles, who has studied visual pathways in larval sardines and anchovies; and Professor John Isaacs, Scripps Institution of Oceanography, who explored some basic laws governing the interrelationships of larval sardines and anchovies.

The annual conference on the California Cooperative Oceanic Fisheries Investigations, of which this symposium was a part is spon-



sored by the Federal Government, State conservation agencies, and educational institutions.



## Fish Oils

### COMPOSITION OF FISH OILS STUDIED BY FRACTIONAL DISTILLATION AND GAS-LIQUID CHROMATOGRAPHY:

Research on the control of chemical alterations in fish and fishery products during storage and processing is being conducted by the U. S. Bureau of Commercial Fisheries Technological Laboratory of Seattle, Wash. One phase, the isolation of highly unsaturated fatty acid fractions will serve the dual purpose of gaining further knowledge of the composition of fish oils and to obtain fractions of the highly unsaturated fatty acids. Some of these fractions are being sent to various laboratories for use in medical, nutritional, and biochemical research problems.

Gas-liquid chromatography of the various distillate fractions of fatty acids provided valuable retention volume data for characterizing certain components of critical pairs in single gas-liquid chromatography column analyses.

Results of these experiments point to the value of low-pressure fractional distillation to readily produce a fraction of polyunsaturated fatty acids from an undistilled residue material. Further work is needed to determine the extent of chemical alterations, if any, to the fatty acid chain and location of double bonds. The experiment has provided valuable qualitative standards for gas-liquid chromatography.

Note: See Commercial Fisheries Review, August 1963 p. 22.



## Great Lakes Fishery Investigations

### DEPTH DISTRIBUTION STUDIES OF CHUBS AND ASSOCIATED SPECIES IN LAKE MICHIGAN CONTINUED:

M/V "Cisco" Cruise 11 (November 6-15, 1963): To study the bathymetric distribution of coregonids (chubs) and associated species during the fall overturn and to collect materials for electrophoretic and serological studies were the main objectives of this cruise in southeastern Lake Michigan by the U. S. Bu-

reau of Commercial Fisheries research vessel Cisco. Work was interrupted repeatedly by inclement weather.

The water was homothermous from surface to bottom out to a depth of about 25 fathoms. Surface water temperatures were mostly 11.4° to 13.2° C. (52.5° to 55.8° F.) On about the same dates in 1962, water in the same area was approximately 2° C. cooler at the surface and was homothermous out to a depth of 35 fathoms.

One or more bottom trawl tows were made at 5-fathom intervals from 5 to 40 fathoms, and at 3, 7, 12, and 17 fathoms. Fish distribution was noticeably different than in August 1963, the date of the last previous sampling. Appreciably warmer bottom temperatures in the 10- to 25-fathom depth range resulted in a generally deeper distribution of all species except sculpins and alewives, which exhibited no definite change.

Blood and flesh samples for electrophoretic and serological studies were collected from chubs caught in Lake Michigan and from northern pike and white suckers collected in the Kalamazoo River.

Half-meter plankton nets towed at various levels over bottoms of 5, 15, and 25 fathoms did not take fish fry. Filamentous algae and large crustacean zooplankton were scarce at those depths, although a few large cladocerans (*Leptodora kindtii*) were observed.

Notes: (1) The M/V Cisco was assigned to Lake Erie for limnological studies by the U. S. Bureau of Commercial Fisheries during cruise 8 (August 28-September 13) and by the U. S. Public Health Service during cruise 9 (September 24-October 8) and cruise 10 (October 15-29, 1963). Reports on those cruises will not be issued by the Bureau's Biological Laboratory at Ann Arbor, Mich.

(2) See Commercial Fisheries Review, Oct. 1963 p. 21.

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### LAKE TROUT DISTRIBUTION STUDIES CONTINUED:

M/V "Siscowet" Cruise 9 (October 14-29, 1963): To assess the spawning population of lake trout in the Apostle Islands region of Lake Superior was the main objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Siscowet. Unseasonably warm and calm weather extended the spawning run into late October, when unspent fish were still found in the cruise area.

A total of 60,300 feet of large-mesh gill nets (4½- to 6½-inch mesh) fished on spawning

grounds near Gull Island Shoal and south of Basswood Island yielded 235 spawning lake trout, nearly all of which were tagged and released. The catches included 30 females, as compared to 3 spawning females captured during the spawning season of 1962. Six lake trout were recaptured which had been tagged on the same spawning grounds in 1962. Of the 218 lake trout captured on Gull Island Shoal, only 3 (1.4 percent) were fin-clipped. The catches south of Basswood Island (17 fish) included 4 fin-clipped lake trout (23.5 percent).

It was learned that limited fishing by the Wisconsin State Conservation Department in the inshore area of the Apostle Islands yielded 27 spawning lake trout (4 females) of which 7 (25.9 percent) were fin-clipped. The higher incidence of fin-clipped lake trout among the inshore spawning populations suggests that hatchery-reared lake trout may tend to return to areas near the original planting site to spawn.

The lengths of the spawning lake trout captured by the Siscowet ranged from 20.0 to 30.6 inches and averaged 26.4 inches (compared to 25.8 inches in 1962). The 30 females ranged in length from 24.3 to 30.0 inches and averaged 27.8 inches (compared to 29.2 inches for the 3 females taken in 1962). Considerable difficulty was encountered in determining ages of the spawning lake trout. Tentative age determinations for 111 males and 30 females gave the following percentage age distribution: five years, 7.8 percent; 6 years, 26.9 percent; 7 years, 34.8 percent; 8 years, 29.8 percent; and 9 years, 0.7 percent.

Small-mesh gill nets ( $1\frac{1}{2}$ - and  $2\frac{1}{2}$ -inch mesh) fished on the spawning grounds caught predominately longnose suckers, with fewer numbers of round whitefish, lake northern chubs, and lake herring. No lake trout eggs were found in the several stomachs examined from each species.

Water temperatures were unseasonably high throughout the cruise. Surface temperatures ranged from  $12^{\circ}\text{C}$ . ( $53.6^{\circ}\text{F}$ .) south of Basswood Island to  $13.4^{\circ}\text{C}$ . ( $56.1^{\circ}\text{F}$ .) on Gull Island Shoal.

Note: See Commercial Fisheries Review, Dec. 1963 p. 26.



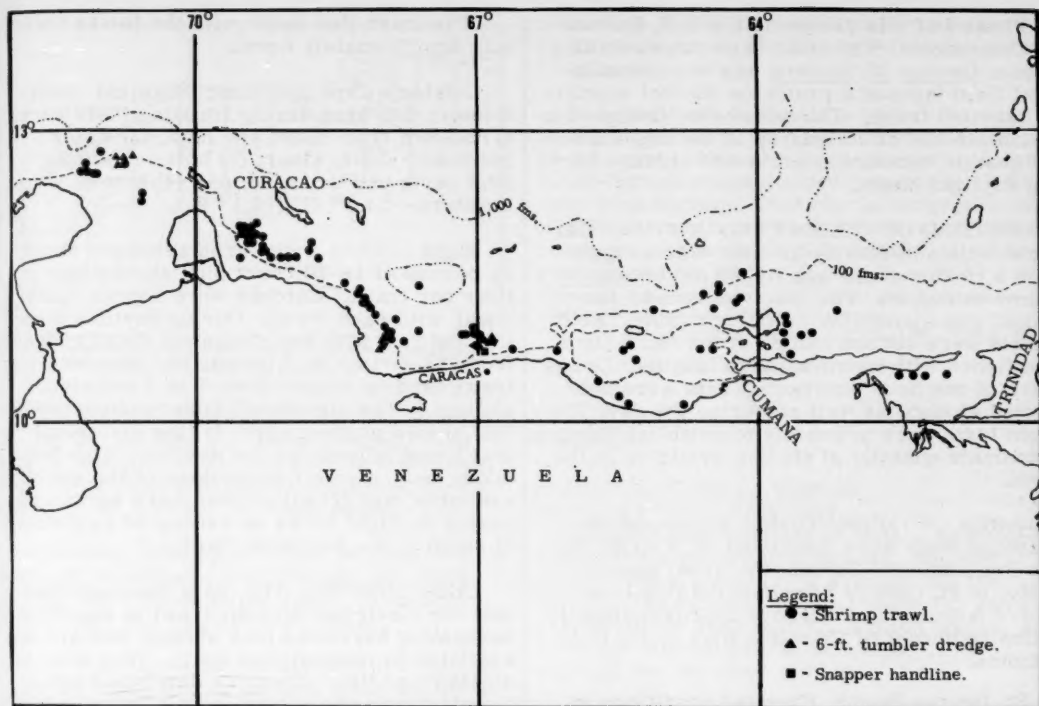
## Gulf Exploratory Fishery Program

### PRELIMINARY SURVEY OFF THE COAST OF VENEZUELA:

M/V "Oregon" Cruise 87 (September 17-November 4, 1963): The primary purpose of this 48-day cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon was to conduct a preliminary survey of the resources of the Continental Shelf and Slope off the Caribbean coast of Venezuela. That area had constituted one of the largest gaps in exploratory fishing coverage of the Caribbean. Transects were run across the shelf and slope from 30 to 100 fathoms in international waters between the Gulf of Venezuela and Caracas (Venezuela), and from 5 to 700 fathoms between Caracas and Trinidad. Four additional drags were made in the Gulf of Paria. Port calls were made at Williamstad, Curacao; LaGuaira and Cumana, Venezuela; and Port of Spain, Trinidad.

From the Gulf of Venezuela to Caracas, depths shallower than 100 fathoms were marked generally by rough bottom conditions, and considerable gear damage was experienced. A few successful drags, with trawls rigged with mud rollers, resulted in catches of pink and brown shrimp (Penaeus duorarum and P. braziliensis) in amounts less than 10 pounds per drag, and in 10- to 25-pound catches of 0.5- to 3.0-pound lane snapper and vermilion snapper. One drag east of the Gulf of Venezuela produced a catch of 50 pounds of 3- to 8-pound scamp (Myctoperca falcata). Fishing for snapper with roller-rigged fish trawls might be more productive than shrimp trawl results indicate in the general area inside 100 fathoms from the mouth of the Gulf of Venezuela to the Golfo de Triste.

Extensive areas suitable for trawling were found in the 200- to 600-fathom depth range along the eastern edge of Pena Paraguana and from Punta Zamuro to the Golfo de Triste. Royal-red shrimp (Hymenopenaeus robustus) were taken in small numbers from 200 to 400 fathoms. The best catches amounted to 25 to 45 pounds (heads-on) per 3-hour drag and occurred between 220 and 240 fathoms where water temperatures averaged  $10^{\circ}\text{C}$ . ( $50^{\circ}\text{F}$ .). Due to the presence of small finger coral over much of that depth range, the use of mud rollers was obligatory, but gear damage was slight. The pink speckled shrimp, Penaeopsis megalops, was also present on the slope in depths of 180-230 fathoms, with the heaviest



Areas investigated during Cruise 87 of the M/V Oregon (September 17-November 4, 1963).

concentrations in 200-225 fathoms. One drag in 225 fathoms took 150 pounds (heads-on) of pink speckled shrimp. Also present in deeper drags, but generally in quantities less than 15 pounds per drag, were the scarlet prawn (*Plesiopeneaus edwardsianus*), two additional penaeids--*Aristaeomorpha foliacea* and *Aristeus antillensis*--and the striped pandalid shrimp (*Plesionika longipes*). Fish catches in deep water were lower than catches in comparable depths and temperatures in the Gulf of Mexico or off the east coast of the United States in those areas, whiting (*Urophycis*) and hake (*Merluccius*) often dominate the fish catches on royal-red shrimp grounds, but such species were markedly less abundant off Venezuela where rattail fish (*Macrouridae*) dominated many catches and were represented by at least 19 species.

Trawling east of Caracas was confined largely to shelf depths, except for transects across the enclosed basin near Margarita Island. Those transects, running from 100 to 700 fathoms, indicated that the basin is devoid of life in its deeper depths, due probably to anaerobic conditions. Drags on the shelf

inside 20 fathoms produced small to moderate catches of croakers (*Micropogon*) and other sciaenids and small catches of lane and vermilion snappers. Efforts to locate concentrations of the South American white shrimp, *Penaeus schmitti*, were unsuccessful along the Caribbean coast, and only small numbers were found in the limited work accomplished in the Gulf of Paria. Dredge drags between Isla Tortugas and the mainland of Venezuela yielded small numbers of scallops which resembled the calico scallop of the Gulf of Mexico. The largest scallop catch was 25 pounds, with other catches averaging less than 2 pounds.

Trolling lines and a careful bridge watch to detect surface schooling tuna were maintained when the vessel was running. Few schools were seen. One unsuccessful attempt was made to sample a school of blackfin tuna in the mid-Caribbean with a 6-inch monofilament gill net.

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#### SHRIMP GEAR STUDIES CONTINUED:

M/V "George M. Bowers" Cruise 48--  
Phase I (October 14-25, 1963): The purpose

of Phase I of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers was to conduct initial field tests of a prototype 40-foot electrical shrimp trawl. The tests were designed to establish the effectiveness of the experimental gear in harvesting burrowed shrimp during daylight hours.

**METHOD OF OPERATION:** A 40-foot flat trawl with a 6-foot by 32-inch doors rigged with a tickler chain was fished on the starboard outrigger. The electrical trawl was fished simultaneously on the port side. Both trawls were set and hauled at the same time and fished with identical warp lengths. Drags were of one hour duration. Tests were conducted at night as well as during the day. The night tests were primarily to establish the approximate quantity of shrimp available in the area.

**AREA OF OPERATIONS:** Comparative trawling tests were conducted off Florida in the Apalachicola-Carrabelle area; specifically, in St. George Sound behind Dog Island in 3-4 fathoms and offshore approximately 15 miles southeast of Cape San Blas in 10-12 fathoms.

**St. George Sound:** Physical conditions in this area during trawling tests were: (1) bottom type--brown mud; (2) water condition (surface)--green, turbid; (3) bottom salinity--33-35 parts per thousand; and (4) bottom temperature--22.5°-23.3° C. (72.5°-73.9° F.).

Night catches in the area averaged about 30 pounds of 31-35 count pink shrimp per hour in each trawl. The night catches with the electrical gear were slightly greater than with the standard trawl.

During the day, catches with the electrical trawl ranged from 19 to 36½ pounds whereas the standard trawl catches ranged from 8¼ to 14½ pounds. The ratio of electrical to standard catch on each drag ranged from 1.5:1 to 3.8:1. The 3 significant factors noted in this series of 15 paired drags were: (1) the electrical gear was producing significantly greater catches than the standard trawl during daylight hours; (2) the electrical gear was not producing daylight catches as large as those taken at night with either trawl i.e., it was not taking all the shrimp available; and (3) the entire shrimp population was not burrowed during the day because daytime catches were made with the standard trawl.

The trash fish catch with the two trawls was approximately equal.

**Offshore Cape San Blas:** Physical conditions in this area during trawling tests were: (1) bottom type--sand and mud; (2) water (surface)--blue, clear; (3) bottom salinity--38.5 parts per thousand; and (4) bottom temperature--24.5° C. (76.1° F.).

Night catches in the area averaged about 22 pounds of 16-20 count pink shrimp per hour per trawl. Catches were approximately equal with each trawl. During daytime fishing, catches with the electrical trawl ranged from 12 shrimp to 9 pounds and standard trawl catches ranged from 0 to 7 individual shrimp. The significant factors observed in this series of tows were: (1) the electrical trawl was influencing the daytime catch but taking only a small percentage of the shrimp available; and (2) all shrimp were burrowed during daylight hours as evidenced by the lack of catch in the standard trawl.

**CONCLUSIONS:** The tests demonstrated that the electrical shrimp trawl is capable of harvesting burrowed pink shrimp that are not available to conventional gear. They also indicated that field strengths developed within the electrode array were partially inadequate. This was particularly evident on the high salinity offshore grounds. Additional laboratory tests were scheduled to determine the modifications needed in the pulse generator and electrode array to improve field strength. Phase II of Bowers Cruise 48 utilizing modified electrical apparatus was to be conducted during November 1963 in the localities described above.

Note: See Commercial Fisheries Review, December 1963 p. 27.

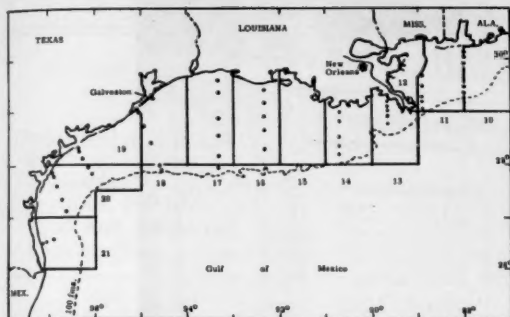


## Gulf Fishery Investigations

### SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-10 (October 20-November 4, 1963): Catches of brown shrimp were light to moderate during this cruise off the coast of Alabama, Mississippi, Louisiana, and Texas by the chartered vessel Gus III. The vessel (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries) was engaged in a continuing study of the distribution of shrimp in the Gulf of Mexico.





Shows the station pattern for the shrimp distribution studies in the Gulf of Mexico during Cruise 10 of Gus-III.

Ten statistical areas (10, 11, 13, 14, 16, 17, 18, 19, 20, and 21) were covered. One 3-hour tow with a 45-foot shrimp trawl was made in each of 3 depth ranges (0-10, 10-20, and over 20 fathoms) in those areas.

Moderate catches of brown shrimp were made off Mississippi and Texas, and white shrimp were found in the under 10-fathom depth along the western Gulf coast.

The best single catch consisted of 87 pounds of 15-20 count brown shrimp from the 10-20-fathom range in area 19. That area also yielded 25 pounds of 21-25 count white shrimp from depths below 10 fathoms.

Area 18 produced 14 pounds of 26-30 count white shrimp from the under 10-fathom depth, 17 pounds of 26-30 count brown shrimp from the 10-20-fathom range, and 14 pounds of 15-20 count brown shrimp from over 20 fathoms.

Off southern Texas, area 20 yielded 25 pounds of 26-30 count white shrimp from under 10 fathoms and 22 pounds of 15-20 count brown shrimp from over 20 fathoms. In area 21, a catch of 28 pounds of 21-25 count brown shrimp was made in the 10-20 fathom range.

The catch off Louisiana was generally light, although a tow in under 10 fathoms off Cameron, La., produced 25 pounds of white shrimp, and sampling in the Mississippi Delta area yielded 12 pounds of 21-25 count white shrimp from under 10 fathoms, 17 pounds of 21-25 count brown shrimp from the 10-20-fathom depth, and 20 pounds of 21-25 count brown shrimp from over 20 fathoms.

In area 11 of the Mississippi coast, a catch of 41 pounds of 15-20 count brown shrimp was

taken from 10-20 fathoms and 35 pounds of 15-20 count brown shrimp were caught in over 20 fathoms.

In area 10 off Alabama, a tow at the over 20 fathoms station produced 17 pounds of 12-15 count brown shrimp, and trawling in the 10-20-fathom range yielded 6 pounds of 15-20 count pink shrimp. That was the largest catch of pink shrimp taken during the cruise. (The occasional catches of pink shrimp at other stations did not exceed 2 pounds each.)

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.

(2) See *Commercial Fisheries Review*, Dec. 1963 p. 32.



## Hawaii

### SKIPJACK TUNA LANDINGS, JANUARY-OCTOBER 1963:

Skipjack tuna landings in Hawaii in October 1963 were about 400,000 pounds, 244,000 pounds below the 1948-62 average for the month. The cumulative total catch for January-October 1963 was 7.8 million pounds, almost 1.6 million pounds below the 1948-62 average for the same period.

During October there were 89 productive trips, giving an average of 3,074 pounds per productive trip. Individual catches ranged from 114 pounds to 10,165 pounds.

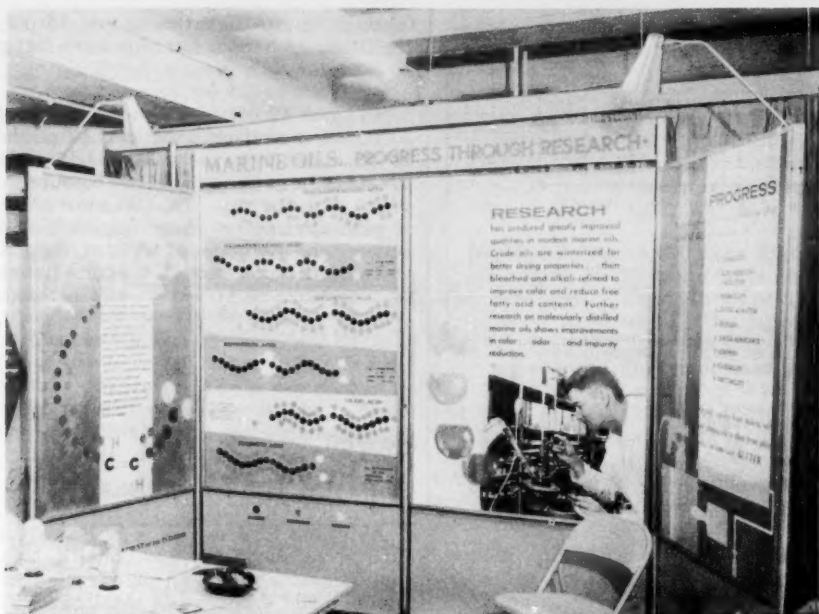


## Industrial Fishery Products

### NEW USES FOR FISH OILS PROMOTED AT ANNUAL PAINT INDUSTRIES SHOW:

The U.S. Bureau of Commercial Fisheries and the National Fisheries Institute (NFI) jointly sponsored an exhibit and booth at the 28th Annual Paint Industries' Show held in Philadelphia, Pa., October 30-November 2, 1963. The Show was described as an educational exhibit of equipment and materials for decorative and protective coatings manufacturers. To the exhibitor, it offered a unique opportunity to present new materials or new applications of materials and equipment to a carefully selected group of technologists and production personnel of the decorative and protective coatings industry.

The Bureau's exhibit used as its theme "Marine Oils. . . Progress Through Re-



U. S. Bureau of Commercial Fisheries exhibit and booth at Paint Industries' Show, Philadelphia, Pa. (October 30-November 2, 1963).

search." It was composed of four panels telling of the properties of marine oils, one panel showing a very colorful presentation of the chemical structure of some of the fatty acids found in these oils. Many favorable comments were heard about the exhibit, and numerous questions regarding the chemistry and uses of marine oils were asked by the many visitors who stopped by the booth. Reprints of some publications reporting research conducted on marine oils at the Bureau's Technological Laboratory in Seattle and a fishery leaflet showing some typical uses for marine oils were distributed at the booth.

In addition to the Bureau exhibit, two other exhibitors made direct mention of marine oils, one being a producer of menhaden oil and the other a large user of such oil. The Bureau booth was manned by a member of the Technical Advisory Unit and a research chemist from the Seattle Technological Laboratory.

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#### U. S. FISH MEAL, OIL, AND SOLUBLES:

Production by Areas, October 1963: Preliminary data on U. S. production of fish meal, oil, and solubles for October 1963 as collected

by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U. S. Production <sup>1/</sup> of Fish Meal, Oil, and Solubles, October 1963 (Preliminary) with Comparisons				
Area	Meal Short Tons	Oil 1,000 Pounds	Solubles .. (Short Tons) ..	Homog- enized <sup>3/</sup>
October 1963:				
East & Gulf Coasts . . .	14,600	12,951	5,669	-
West Coast <sup>2/</sup> .	3,261	1,029	2,090	-
Total . . . . .	17,861	13,980	7,759	-
Jan.-Oct. 1963				
Total . . . . .	213,244	167,323	86,744	7,216
Jan.-Oct. 1962				
Total . . . . .	275,242	244,009	105,893	8,915
<sup>1/</sup> Does not include crab meal, shrimp meal, and liver oils.				
<sup>2/</sup> Includes Hawaii, American Samoa, and Puerto Rico.				
<sup>3/</sup> Includes condensed fish.				
Note: Beginning with March 1963 fish oil is shown in pounds in- stead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.				

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Production, September 1963: During September 1963, 23,247 tons of fish meal and 19.8 million pounds of oil were produced in the United States. Compared with the same month in 1962, this was a decrease of 8,465 tons or



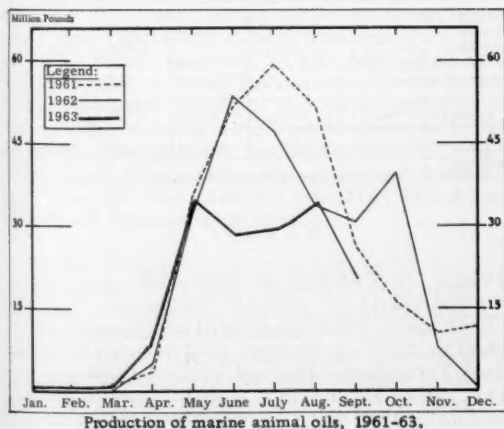
U. S. Production of Fish Meal, Oil, and Solubles, September 1963 <sup>1/</sup> with Comparisons					
Product	September		Jan.-Sept.		Total 1962
	1/1963	1962	1/1963	1962	
	..... (Short Tons) .....				
<b>Fish Meal and Scrap:</b>					
Herring .....	1,296	737	6,459	4,548	5,095
Menhaden 2/ .....	18,563	27,285	153,748	198,972	238,680
Sardine, Pacific .....	7	8	16	673	702
Tuna and mackerel .....	2,089	1,368	16,058	20,595	26,559
Unclassified .....	1,292	2,314	17,781	24,802	27,297
<b>Total .....</b>	<b>23,247</b>	<b>31,712</b>	<b>194,062</b>	<b>249,590</b>	<b>298,333</b>
Shellfish, marine-animal meal and scrap .	3/	3/	3/	3/	12,899
<b>Grand total meal and scrap .....</b>	<b>3/</b>	<b>3/</b>	<b>3/</b>	<b>3/</b>	<b>311,232</b>
<b>Fish Solubles:</b>					
Menhaden .....	8,272	10,091	63,638	71,460	84,885
Other .....	1,204	2,197	13,296	22,483	28,353
<b>Total .....</b>	<b>9,476</b>	<b>12,288</b>	<b>76,934</b>	<b>93,943</b>	<b>113,238</b>
Homogenized condensed fish .....	90	700	7,224	9,570	11,096
	..... (1,000 Pounds) .....				
<b>Oil, Body:</b>					
Herring .....	196	642	4,868	4,759	5,255
Menhaden 2/ .....	18,144	29,611	138,230	192,203	237,815
Sardine, Pacific .....	2	6	2	164	167
Tuna and mackerel .....	842	513	3,695	3,841	5,175
Other (including whale) .....	639	425	6,951	6,918	7,396
<b>Total oil .....</b>	<b>19,823</b>	<b>31,197</b>	<b>153,746</b>	<b>207,885</b>	<b>255,808</b>
<sup>1/</sup> Preliminary data.					
<sup>2/</sup> Includes a small quantity of thread herring.					
<sup>3/</sup> Not available on a monthly basis.					
Note: Beginning with February 1963, fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.					

<sup>1/</sup>Preliminary data.

<sup>2/</sup>Includes a small quantity of thread herring.

<sup>3/</sup>Not available on a monthly basis.

Note: Beginning with February 1963, fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.



27 percent in meal and scrap production, and approximately 11.4 million pounds or 36 percent less in oil production.

Menhaden meal showed a decrease of 8,722 tons or 32 percent, while menhaden oil (18.1 million pounds) was 39 percent less than in September 1962.

A total of 9,476 tons of fish solubles was manufactured in September 1963--a decrease of 23 percent as compared with the same month in 1962. Production of homogenized condensed fish amounted to 90 tons--a decrease of 610 tons or 87 percent less than in September 1962.

The quantity of fish meal processed during the first 9 months of 1963 amounted to 194,062 tons--55,528 tons less than in the same period

in 1962. Fish solubles and homogenized fish production totaled 84,158 tons--a decrease of 19,355 tons. The January-September production of marine animal oil amounted to 153.7 million pounds--54.1 million pounds less than during the same period of 1962.

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**Major Indicators for U.S. Supply, October 1963:** United States production of fish meal and fish oil in October 1963 was lower by 51.2 and 64.7 percent, respectively, as compared

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, October 1963					
Item and Period	1963	1962	1961	1960	1959
<b>Fish Meal:</b>					
Production 1/:					
December .....	-	2,349	12,750	9,185	14,381
November .....	-	11,023	10,058	8,725	10,797
October .....	17,861	36,614	16,852	24,455	22,026
Jan.-Sept. ....	194,062	249,590	257,399	232,583	227,843
Jan.-Dec. prelim. totals 2/ .....	-	288,336	289,039	257,969	275,396
Jan.-Dec. final tot. ....	-	311,232	311,265	290,137	306,551
<b>Imports:</b>					
December .....	-	18,977	23,268	15,564	5,538
November .....	-	11,904	25,649	6,149	3,673
October .....	-	12,732	9,425	12,515	3,821
Jan.-Sept. ....	303,810	208,694	159,140	97,333	120,643
Jan.-Dec. totals ..	-	252,307	217,845	131,561	133,955
<b>Fish Solubles:</b>					
Production 3/:					
December .....	-	1,613	4,606	3,574	5,039
November .....	-	4,147	5,153	2,891	5,451
October .....	7,759	15,010	8,418	11,139	13,946
Jan.-Sept. ....	84,158	103,513	90,841	88,757	152,477
Jan.-Dec. prelim. totals .....	-	120,886	109,018	106,361	176,913
Jan.-Dec. final tot. ....	-	124,334	112,241	98,929	165,359
<b>Imports:</b>					
December .....	-	387	472	60	420
November .....	-	435	3,649	282	3,089
October .....	-	290	110	-	1,908
Jan.-Sept. ....	2,994	5,196	2,508	2,832	21,213
Jan.-Dec. totals ..	-	6,308	6,739	3,174	26,630
<b>Fish Oils:</b>					
Production:					
December .....	-	605	11,532	8,041	14,457
November .....	-	7,956	10,539	9,315	8,887
October .....	13,980	39,563	14,734	23,439	19,866
Jan.-Sept. ....	153,746	207,885	221,568	163,045	146,611
Jan.-Dec. prelim. totals 4/ .....	-	257,131	259,400	206,848	189,240
Jan.-Dec. final tot. ....	-	255,808	266,670	215,861	193,324
<b>Exports:</b>					
December .....	-	172	10,484	15,807	19,586
November .....	-	171	1,425	14,640	6,096
October .....	-	26,003	15,202	4,434	14,331
Jan.-Sept. ....	187,012	96,624	95,373	108,795	104,470
Jan.-Dec. totals ..	-	123,050	122,486	143,659	144,481

1/Does not include crab meat, shrimp, and misc. meals.  
2/Preliminary data computed from monthly data. Fish meal production reported currently comprised 90 percent for 1959, 89 percent for 1960, 93 percent for 1961 and 1962.

3/Includes homogenized fish.  
4/Preliminary data computed from monthly data. Represents over 95 percent of the total production.

5/Beginning with March 1963 fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.  
Note: Data for 1963 are preliminary.

with October 1962. Fish solubles production was down 48.3 percent.

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#### U.S. FISH MEAL AND SOLUBLES:

**Production and Imports, January-September 1963:** Based on domestic production and imports, the United States available supply of fish meal for January-September 1963 amounted to 497,872 short tons--39,588 tons (or 8.6 percent) more than during the same period in 1962. Domestic production was 55,528 tons (or 22.2 percent) less, but imports were 95,116 tons (or 45.6 percent) higher than in the same period in 1962. Peru continued to lead other countries with shipments of 231,210 tons.

The United States supply of fish solubles (including homogenized fish) during January-September 1963 amounted to 87,152 tons--a decrease of 21,557 tons as compared with the same period in 1962. Domestic production and imports dropped 18.7 percent and 42.4 percent, respectively.

U. S. Supply of Fish Meal and Solubles, January-September 1963 with Comparisons			
Item	Jan.-Sept.		Total 1962
	1/1963	1962	
..... (Short Tons) .....			
<b>Fish Meal and Scrap:</b>			
<b>Domestic production:</b>			
Menhaden .....	153,748	198,972	238,680
Tuna and mackerel .....	16,058	20,595	26,559
Herring .....	6,459	4,548	5,095
Other .....	17,797	25,475	40,898
Total production .....	194,062	249,590	311,232
<b>Imports:</b>			
Canada .....	39,535	33,738	42,806
Peru .....	231,210	156,111	186,249
Chile .....	22,637	8,255	9,247
So. Africa Republic .....	7,241	9,584	10,084
Other countries .....	3,187	1,006	3,921
Total imports .....	303,810	208,694	252,307
Available fish meal supply .....	497,872	458,284	563,539
<b>Fish Solubles:</b>			
<b>Domestic production 2/. .....</b>			
Jan.-Sept. ....	84,158	103,513	124,334
<b>Imports:</b>			
Canada .....	1,624	1,196	1,335
Iceland .....	-	2,205	2,332
So. Africa Republic .....	191	1,192	1,717
Other countries .....	1,179	603	924
Total imports .....	2,994	5,196	6,308
Available fish solubles supply ..	87,152	108,709	130,642

1/ preliminary.  
2/ 50-percent solids. Includes production of homogenized condensed fish.

1/Preliminary.  
2/50-percent solids. Includes production of homogenized condensed fish.

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#### REVIEW OF TRENDS IN THE USE OF FISH MEAL IN TEXAS AREA:

In October 1963, the animal nutritionist attached to the U.S. Bureau of Commercial Fisheries' Technical Advisory Unit, at Boston Mass., attended the 18th Annual Texas Nutrition Conference and visited mixed feed pro-

ducers and experiment station scientists in Texas and areas in Arkansas and Louisiana bordering Texas. His observations were as follows:

Levels of fish meal utilization in the area visited vary in two different ways, according to nutritionists formulating rations for production by large firms. First of all there is a regional variation, the levels of utilization being relatively higher in the western part of Texas than in the eastern part of the State and in areas adjoining States located near the Texas border. For example, 5 percent fish meal vs. 2.5 percent in chick starter rations and 2 percent vs. 0.5 percent fish meal in laying rations are typical levels found in rations liberally supplied as compared with others less liberally supplied with the meal. The second variation in rate of utilization is related to the use to which the feed is to be put; relatively low levels of fish meal are found in rations produced for sale under brand names in order to cut costs and enable producers to compete with other manufacturers. However, relatively liberal levels often appear in custom mixed rations because the buyers specify such levels of fish meal.

Workers at the Texas A. and M. Experiment Station are now, and have long been, actively engaged in research on the value of industrial fish products in poultry and livestock feeding. More recently, active research on fish product utilization has been initiated at the substations at Gonzales and Lubbock. At the former station, work on fish product utilization in poultry rations is carried out, whereas at the latter an experiment in which menhaden oil is fed to young cattle at a level equal to 2 percent of the ration has been in progress. Workers at both stations plan to continue their research on fish products. At Lubbock, the value of fish oil in dry lot cattle feeding and the values of fish meal and other fish products in the nutrition of sheep will be studied. The plan for the sheep research is based upon the findings of a practical Scottish agriculturist who recently reported beneficial effects of fish meal on sheep.

At the Texas Nutrition Conference, evidence of the nutritional values of fish products was offered by a number of speakers. They reported that, in a study of feed requirements of broiler hens, fish meal increased both hatchability and fertility of eggs. Another report, described the results of feeding fish meal as follows: "A significant improve-

ment in feed conversion was observed each time the fish meal was substituted in the broiler feed formulas either at the 2.5 or 5 percent levels and in the presence of either 2.5 or 5 percent poultry oil." The speaker postulated that the improvement was due in large part to the presence of unidentified growth factors (UGF) in the meals.

A scientist from Chicago, Ill., stated that unidentified growth factors "are needed in poultry, beef, and swine nutrition, and in many instances can be the deciding factor between success and failure of an enterprise." The speaker presented evidence that UGF protects swine from gastric ulcers. In addition, he reported that feed efficiency of broilers during a 9-week period was greater on rations containing 3 percent fish meal than on similar rations containing 1 percent fermentation product.

Speakers from the Texas A. and M. University, presented results of an experiment that showed fish meal to be a necessary ingredient of an economical ration for swine. Ordinary (not degossypolized) cottonseed meal was fed swine with and without iron salts and with and without fish meal. A ration containing 7 percent fish meal with iron salts resulted in the highest rate of gain and greatest feed efficiency when comparisons were made with rations (1) lacking fish meal, (2) containing 4.3 percent fish meal, and (3) containing meat scraps as a substitute for fish meal. This finding is of commercial importance in the southern states where cottonseed meal is the least expensive protein concentrate available. However, untreated cottonseed meal contains gossypol which is toxic to swine, and for this reason cottonseed meal ordinarily has not been used in mixed feeds for swine. The Texas finding paves the way for the production of economical rations for swine in the southern states using cottonseed meal as an economical source of protein together with an iron salt and fish meal--the latter is an essential part of the ration. (Technical Advisory Unit, Boston, Mass., November 7, 1963.)



## Irradiation Preservation

### COMPARATIVE TESTS MADE WITH IRRADIATED FILLETS AND FRESH CONTROLS:

As part of the research on the irradiation of seafoods under way at the Gloucester Tech-

nological Laboratory of the U.S. Bureau of Commercial Fisheries, large scale acceptability tests were conducted in November 1963 at Fort Lee, Va. Chemists from the Bureau's Laboratory supervised the preparation of samples of irradiated haddock fillets for use in the tests with troops at Fort Lee.

The irradiated haddock fillets were fed to 300 soldiers, and an equal number were served fresh controls. Following the tests the soldiers completed score sheets to indicate their preferences. The results were to be analyzed statistically and evaluated to determine overall preference.



## Maine Sardines

### CANNED STOCKS, NOVEMBER 1, 1963:

Canners' stocks of Maine sardines on Nov. 1, 1963, were 93,000 cases less than the 1,348,000 cases on hand Nov. 1, 1962, but were 1,034,000 cases above stocks on hand two years ago on Nov. 1, 1961 (the pack for the 1961 season was unusually small). Distributors' stocks of 308,000 cases of canned Maine sardines were up 34.0 percent from the 230,000 cases on hand Nov. 1, 1962, and up 52.5 percent from the 202,000 cases on hand Nov. 1, 1961.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, November 1, 1963, with Comparisons

Type	Unit	11/1/63	11/1/62	11/1/61
Distributors . . . . .	actual cases	308,000	230,000	202,000
Canners . . . . .	std. cases 1/	1,255,000	1,348,000	221,000

1/100 3/4 cr. case equal one standard case.

Source: U. S. Bureau of the Census, "Estimates of Distributors' and Canners' Stocks--Nov. 1, 1963."

The 1963 season pack totaled about 1,500,000 standard cases on Nov. 1, 1963, when the pack was virtually complete, according to the Maine Sardine Council. On April 15, 1963, carryover stocks at the canners' level amounted to about 660,000 cases. Adding the pack as of Nov. 1, 1963, results in a total supply of 2,160,000 cases as of that date--up 2.6 percent from the total supply of 2,106,100 cases reported Nov. 1, 1962, and higher by 98.7 percent from the short supply of 1,087,000 cases as of Nov. 1, 1961.

Table 2 - Canned Maine Sardines--Season Supply as of November 1, 1963, with Comparisons

Item	1963	1962	1961
Canners' carryover stocks on April 15 2/	660,000	33,000	457,000
Season pack to Nov. 1 2/	1,500,000	2,073,100	630,000
Total supply as of Nov. 1	2,160,000	2,106,100	1,087,000

2/100 3/4 cr. case equal one standard case.

3/The usual legal packing season in Maine, extending from April 15 to Dec. 1, was in effect during the 1961 and 1963 season. The 1962 season was extended to 13 months--Dec. 2, 1961-Jan. 1, 1963--but the 1962 pack canned before April 15 was limited.

Note: Beginning with the Canned Food Report of April 1, 1963, U. S. Bureau of the Census estimates of distributors' stocks were based on a revised sample of merchant wholesalers and warehouses of retail multimarket organizations. The revised sample resulted in better coverage. The January 1, 1963, survey was conducted with both samples to provide an approximate measure of the difference in the two samples. That survey showed that the estimate of distributors' stocks of canned Maine sardines from the revised sample was 15 percent above that given by the old sample.

Source: U. S. Bureau of the Census, Canned Food Report, Nov. 1, 1963.



## Marketing

### EDIBLE FISHERY PRODUCTS

#### MARKETING PROSPECTS, WINTER 1963/64:

It is expected that total United States catch of fishery products during 1963 will be somewhat lower than a year earlier. During the first 8 months in 1963, total landings were down about 13 percent from a year earlier. However, cold-storage holdings of edible fishery products on October 1, 1963, were 224 million pounds, about 17 million larger than on the same date in 1962. The last few months of 1963 is a season of normal decline for landings of fish and shellfish.

Imports of edible fish through August 1963 were down about 6 percent from a year earlier. There was a 2.2 percent decrease in value of imports. Sharp decreases occurred in imports of canned tuna in brine, canned salmon, canned sardines in oil, and frozen tuna. Increases occurred in canned sardines not in oil, frozen shrimp, ocean perch fillets, fresh swordfish, and canned crab meat. Continued decrease in total imports was expected for the remainder of 1963.

Wholesale fish prices in September 1963 were almost 11 percent lower than a year earlier. Retail prices were down only slightly. But there were sharp decreases in prices for fresh and frozen shrimp and for most canned fish products. During the latter part of 1963, prices were expected to remain about stable.

Per capita consumption during the winter months of 1963/64 probably will be down from a year earlier.

This analysis was prepared by the Bureau of Commercial Fisheries, Fish and Wildlife Service, U. S. Department of the Interior, and published in the Department of Agriculture's November 1963 issue of The National Food Situation (NFS-106).



## Michigan

### LAKE TROUT STOCKING PROGRAM CONTINUED IN FALL 1963:

Plantings of about 300,000 lake trout were made in 15 northern Michigan lakes by the Michigan Conservation Department in the fall of 1963.



The plantings, made up of about 260,000 fingerlings and 40,000 keeper-sized fish, were carried out as part of a continuous program to maintain lake trout numbers in inland waters where there is virtually no natural reproduction by these fish.

The releases of fingerlings totaled 100,000 in Lake Michigan; 10,000 in Little Oxbow Lake; 50,000 each in Golden and Smokey Lakes; and 50,000 in Walloon Lake.

Plantings of legal-sized lake trout included 5,000 in Glen Lake; 1,245 in Grand Sable Lake; 100 and 1,000 in Tilden and Squaw Lakes; 2,500 in Lake Bellaire; 3,000 each in Chicago and Golden Lakes; 10,000 and 5,000 in Elk and Torch Lakes; and 9,300 in Higgins Lake.

Another 55,775 legal and sublegal lake trout were released in the spring of 1963 in Crystal Lake, Walloon Lake, Golden and Chicago Lakes, Tilden and Squaw Lakes, and Lake Avalon.



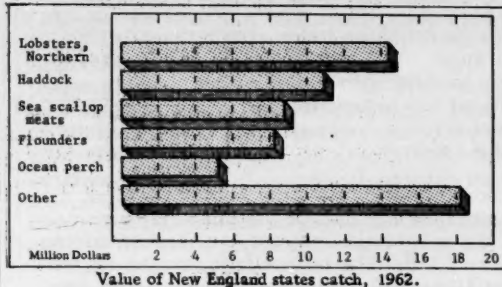
## New England

### FISHERIES, 1962:

Fish and shellfish landings in the New England States (Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut) during 1962 amounted to 872 million pounds valued at \$66 million ex-vessel. Compared with 1961, this was an increase of 112 million pounds (15 percent) and \$5 million (8 percent).

The gain in production resulted chiefly from sea herring landings of 158 million pounds--up 100 million over 1961. There was a considerable increase in the catch of yellowtail flounders. Landings of cod, whiting, and lobsters also showed improvement com-

pared with 1961. These increases, however, were partially offset by reduced landings of ocean perch, pollock, and sea scallops.



The 1962 Maine landings of 294 million pounds and Massachusetts landings of 493 million increased about 96 million pounds and 23 million pounds, respectively, compared with 1961. Rhode Island production in 1962 totaled nearly 77 million pounds--a decline of 7 million. Landings in New Hampshire (1 million pounds) and Connecticut (6 million pounds) remained much the same as in 1961.

There were 21,549 fishermen engaged in the New England fisheries in 1962--about 188 less than in 1961. This decrease occurred in the vessel fishery and in the number of regular fishermen employed in the shore and boat fisheries. The latter fishery showed an increase of 265 casual fishermen compared with 1961. Fishing craft operated in the New England area during the year consisted of 729 vessels totaling 45,839 gross tons, 10,414 motor boats, and 699 other boats.



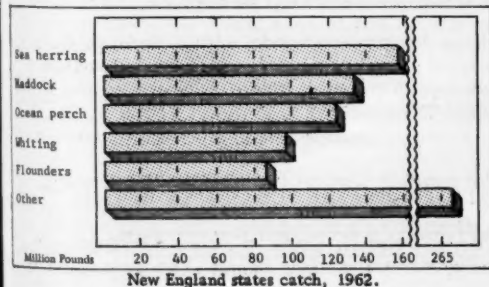
## North Atlantic Fisheries

### Exploration and Gear Research

#### ELECTRICAL TRAWLING

##### TESTS CONTINUED:

M/V "Delaware" Cruise 63-9 (September 28-October 10, 1963 and October 15-24, 1963): To continue to test and evaluate the effect of an electric field upon the catch of a commercial otter-trawl net when the field is used as an adjunct to the net, was the main purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The electrical system was designed primarily to immobilize fish in the path of the advancing trawl. The equipment



used was similar to that tested during Delaware Cruise 62-9 (July 11-August 24, 1962).

The earlier trials were made to compare the electrical trawl with a non-electrical trawl as to quantitative fish-catching capability. The most recent electrical fishing tests were made to determine whether or not size selectivity of the individual fish in the catches could be achieved by adjusting the characteristics of the electric pulses fed into the water.

No clear cut fish-size selectivity was discernible as a result of the pulse frequencies and the electrode arrangement tested during Cruise 63-9. The output frequencies tested were 10 and 40 pulses per second from two net transformers which were fired alternately. (A single anode and cathode were connected to each transformer secondary.) The similarity of results from fishing with those frequencies indicate the possibility of an overlapping of the effective fields. If that was the case, the number of pulses per second in the overlapped field space would have been doubled. This could have obscured the possible effect of the lower pulse frequency. A modification of the equipment to provide a pure pulse frequency throughout the field is planned for the next scheduled electro-trawling trials in February 1964.

The conductor towing warps used during the cruise were comprised of an insulated single conductor made of copper (located at the center of the cable) with two outer, non-insulated, layers of stranded steel wire for strength. The steel wire was successfully used as the electrical return from the net transformers. This wire, however, was subject to bruising, and easy rupture of the conductor insulation was the result. A more mechanically suitable system, such as an adequately designed third wire and winch, may ultimately be required.

Fishing was conducted with a No. 41 large mesh ( $4\frac{1}{2}$ -inch internal measurement), manila net. After the first few days of fishing the large mesh cod end was replaced with a  $2\frac{1}{2}$ -inch cod end for the collection of smaller fish. No consistent differences were found between the size selectivity of 10 and 40 pulses per second when taking either large or small fish.

Note: See Commercial Fisheries Review, November 1962 p. 31.



## North Pacific Exploratory Fishery Program

### PELAGIC TRAWL TESTED FOR EFFECTIVENESS IN CATCHING WINTER HERRING;

M/V "Yaquina" Cruise 1 (November 6-24, 1963): The primary objectives of this cruise by the U. S. Bureau of Commercial Fisheries chartered exploratory fishing vessel Yaquina were to: (1) evaluate the catching effectiveness of a modified Cobb pelagic trawl in capturing winter herring; (2) determine net efficiency and behavior characteristics relative to the capture of winter herring; and (3) evaluate the utility of the chartered vessel Yaquina for fishing gear research. Tests and trials were conducted in the San Juan Islands, Strait of Georgia, and Bellingham Bay areas of Puget Sound.

Extensive soundings were made throughout the cruise area, but concentrations of herring were found only in the Bellingham Bay-Eliza Island area. Several 1-hour hauls in that area yielded herring in excess of 2,000 pounds. But no catches exceeded 3,000 pounds, although commercial seine fishermen in the immediate vicinity captured quantities up to 40 tons or more a set.

A total of 600 pounds of large herring were collected for radiation studies.

Underwater observations by SCUBA - equipped divers pointed up the need for additional net modifications. Small-mesh liners were installed in the intermediate and cod-end sections, and a small-mesh fyke was installed in the forward section of the cod end. The modifications resulted in only slight improvement in the catches.

Through the courtesy of a fish company in Seattle, Wash., the M/V Paragon assisted in a single attempt to tow the Cobb pelagic trawl with two vessels. A one-ton herring catch was made even though little indication of fish was noted on the echo-sounder.

Five tows were made with a British Columbia-type midwater herring trawl to furnish a measure of relative effectiveness for the Cobb pelagic trawl.

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### SCALLOP RESOURCES OFF COAST OF OREGON SURVEYED:

M/V "John N. Cobb" Cruise 62 (September 30-November 22, 1963): The principal ob-



jective of this cruise by the U.S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb was to locate and delineate the scallop resources along the Oregon coast.

The regions surveyed during this cruise were the areas from Cape Arago to Newport, Oreg., and from the Columbia River lightship to Cape Falcon, Oreg.

A total of 126 drags were made in water depths ranging from 30 to 70 fathoms. The best catches in the area from Cape Arago to Newport occurred off the Siuslaw River in depths of 45 to 55 fathoms. These catches ranged up to 175 scallops (1½ bushels) per one-half hour drag. The eastern otter trawl was also fished and the resultant catches were not as large. The incidental trawl fish catch was quite large and therefore the use of this gear was less desirable. In the area from the Columbia River to Cape Falcon the best catches occurred off Tillamook Head in 50 to 55 fathoms of water. The catches ranged up to 635 scallops (4 bushels) per half-hour tow. Night and day comparison drags were made with no difference in the scallop catches.

Due to the extreme weather conditions encountered, the area from Newport, Oreg., to Cape Falcon could not be surveyed as was planned.

Approximately 400 pounds of fresh scallops were delivered to the Oregon State University Seafood Laboratory at Astoria, Oreg., for a meat yield study.

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#### SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER CONTINUED:

M/V "Commando" Cruise 12: The 12th in a series of cruises designed to monitor deep-water marine fauna at stations established along a trackline southwest of the mouth of the Columbia River was completed November 14, 1963, by the U.S. Bureau of Commercial Fisheries chartered research vessel Commando. The cruise was conducted in cooperation with the Atomic Energy Commission.

Inclement weather restricted fishing to 1 day, during which a 30-minute tow was made at 50 fathoms and a 1-hour tow at 100 fathoms. A 400-mesh otter trawl was used.

Commercial species of fish taken during trawling included Dover sole (Microstomus pacificus), rex sole (Glyptocephalus zachirus), petrale sole (Eopsetta jordani), English sole (Parophrys vetulus), sablefish (Anoplopoma fimbria), ocean perch (Sebastes alutus), lingcod (Ophiodon elongatus), and halibut (Hippoglossus stenolepis). The most abundant species in the catches were rex sole (1,200 pounds) from 50 fathoms and Dover sole (1,500 pounds) from 100 fathoms. Other catches included 50 pounds of petrale sole and 150 pounds of English sole from 50 fathoms, and 200 pounds of sablefish and 400 pounds of ocean perch from 100 fathoms.

Small quantities of Dungeness crab (Cancer magister) and pink shrimp (Pandalus jordani) were found.

Samples of fish were collected and delivered to the Laboratory of Radiation Biology, University of Washington, for radiological analysis.

The cooperative program with the Oregon Fish Commission to study the migrations of Dover sole and sablefish was continued with the tagging of 99 Dover sole and 13 sablefish.

Note: See Commercial Fisheries Review, November 1963 p. 40.



### Oceanography

#### ADDRESS TO THE NATIONAL ACADEMY OF SCIENCES BY THE LATE PRESIDENT KENNEDY:

The late President Kennedy on October 22, 1963, addressed the centennial convocation of the National Academy of Sciences, held in Washington, D. C. The following excerpts from his speech are of particular interest to oceanographers:

"I recently sent to Congress a plan for a national attack on the oceans of the world, calling for the expenditure of more than \$2 billion over the next ten years. This plan is the culmination of three years' effort by the Inter-Agency Committee on Oceanography, and it results from recommendations made by the National Academy.

"Our goal is to investigate the world ocean, its boundaries, its properties, its processes. To a surprising extent, the sea has remained a mystery. Ten thousand fleets still sweep



The late President John F. Kennedy.

over it in vain. We know less of the oceans at our feet, where we came from, than we do of the sky above our heads. It is time to change this, to use to the full our powerful new instruments of oceanic exploration, to drive back the frontiers of the unknown in the waters which encircle our globe.

"I can imagine no field among all those which are so exciting today than this great effort which our country and others will carry on in the years to come. We need this knowledge for its own sake. We want to know what is under the sea, and we need it to consider its bearings on our security, and on the world's social and economic needs. It has been estimated, for example, that the yield of food from the seas could be increased five or ten times through better knowledge of marine biology, and some day we will seed and weed and harvest the ocean. Here, again, the job can best be done by the nations of the world working together in international institutions.

"As all men breathe the same air, so a storm along Cape Cod may well begin off the shores of Japan. The world ocean is also indivisible, and events in one part of the great sea have astonishing effects in remote places.

"International scientific cooperation is indispensable if human knowledge of the ocean is to keep pace with human needs. . . .

"If science is to press ahead in the four fields (natural resources, oceanography, meteorology, environmental controls) that I have mentioned, if it is to continue to grow in effectiveness and productivity, our society must provide scientific inquiry the necessary means of sustenance. We must, in short, support it.

Military and space needs, for example, offer little justification for much work in what Joseph Henry called abstract science. Though such fundamental inquiry is essential to the future technological vitality of industry and Government alike, it is usually more difficult to comprehend than applied activity, and, as a consequence, often seems harder to justify to the Congress, to the Executive Branch, and to the people. . . .

"Science has made all of our lives so much easier and happier in the last 30 years. I hope that the people of the United States will continue to sustain all of you in your work and make it possible for us to encourage other gifted young men and women to move into these high fields which require so much from them and which has so much to give to all of our people. So the need is very great. Even though some of your experiments may not bring fruition right away, I hope that they will be carried out immediately.

"It reminds us of what the great French Marshal Lyautey once said to his gardener: 'Plant a tree tomorrow.' And the gardener said, 'It won't bear fruit for a hundred years.' 'In that case,' Lyautey said to the gardener, 'plant it this afternoon.' That is how I feel about your work."

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#### COMMITTEE FOR SCIENTIFIC EXPLORATION OF THE ATLANTIC SHELF:

The Committee for the Scientific Exploration of the Atlantic Shelf (SEAS) held its winter meeting on December 12-13, 1963, in Washington, D. C. The SEAS Committee membership is comprised of marine biologists, physical and chemical oceanographers, geological oceanographers, and marine meteorologists who are conducting research operations on the Atlantic shelf environment.

The role of the SEAS Committee has been outlined as follows: (1) To emphasize the importance of the Atlantic shelf and stimulate interest in its oceanography; (2) to intensify observations of the shelf environment--physical, chemical, geological, and biological; (3) to provide the nucleus for the development of integrated large-scale marine research efforts; (4) to foster systems for continuous collection and compilation of environmental data; (5) to foster efficient means for the exchange of data currently collected by all laboratories; (6) to provide a sounding board for

development of new equipment and techniques; and (7) to provide an opportunity for regular exchange of ideas and for growth of community opinion on environmental research. (National Oceanographic Data Center, Newsletter, October 31, 1963.)

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#### HONOLULU LABORATORY VESSEL FINISHES FIRST PHASE OF INDIAN OCEAN SURVEY:

M/V "Anton Bruun" Cruise 2 (May 22-July 23, 1963): Halfway around the world from their home base, the Biological Laboratory at Honolulu, scientists, and fishermen of the U. S. Bureau of Commercial Fisheries have been engaged in a study of the high-seas fishery resources and oceanography of the Indian Ocean. According to the Bureau's Hawaii Area Director, this far-flung research project is part of a larger effort in which the marine scientists of many countries have joined forces in a concerted study of the waters, the living inhabitants, the weather, and the submarine geology of the least-known of the world's oceans. The Honolulu Laboratory was selected to carry out the United States' fishery research portion of this program because of the extensive experience which its staff has accumulated in the investigation of tunas and other open-sea fishes and their environments in the tropical Pacific. From what was known of the Indian Ocean, it was expected that the tunas and spearfishes would also figure prominently in the fishery picture there.

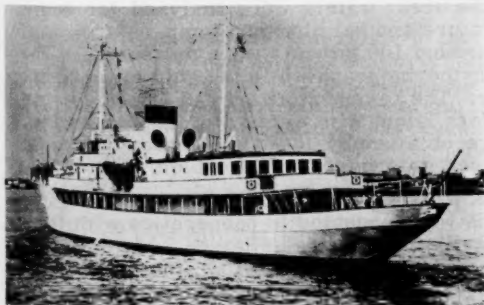
The first tuna fishing cruise under the program was Cruise 2 of the research vessel Anton Bruun. This vessel (formerly the Presidential yacht Williamsburg) is being used as a floating laboratory for the United States biological studies in the Indian Ocean. Although the Anton Bruun is much larger than most

tuna fishing boats, and was not designed for such utilitarian employment, a fishery research biologist at the Honolulu Laboratory, and Chief Scientist of Cruise 2, managed to work out modifications that made it possible to fish successfully with tuna long lines from the ship.

This cruise began May 22, 1963, at Bombay, India, and was completed with the vessel's return to that port on July 23. This period was chosen for sampling fish distribution and environmental conditions during the southwest monsoon, when the prevailing wind is from the southwest, one of the two sharply contrasting seasons of the Indian Ocean area. The Indian Ocean is the only major body of water in the world which is under the influence of two "trade wind" systems from one season to the next. This fact makes environmental studies of this kind very important. Studies of this type could greatly increase our understanding of the effect of a changing environment on oceanic food resources. Two scientists and five Honolulu fishermen carried out sampling of the fish populations at 33 locations on two lines running north and south across the Equator at 70 and 80 degrees E. long., south of the tip of the Indian peninsula. At each location, 240 baited hooks were set 200 to 300 feet below the surface of the sea. This fishing was paralleled by measurement of sea temperatures and sampling of the ocean water at depths down to 6,000 feet and collection of various small living forms associated with the larger fishes of the surface layers.

The main components of the catches were yellowfin and albacore tuna, along with big-eye tuna, marlin and sailfish, and sharks of a number of species. The best tuna catch of the cruise was made slightly north of the Equator in the vicinity of the Maldive Islands, where 44 yellowfin were taken in one day, for an unusually high catch rate of 18.4 fish per 100 hooks.

Distribution of the long-line catches, when compared with distribution of the ocean water types encountered on the cruise, showed that albacore were caught only in the South Indian Ocean Central type of water, while the other tunas--yellowfin, bigeye, and skipjack-- were taken throughout this water type as well as in the Equatorial water type and along the southern edge of the Arabian Sea water. The marlins were associated in general with the Arabian Sea and Equatorial waters, while the great



Research vessel Anton Bruun (formerly the Presidential yacht Williamsburg).

blue shark, like the albacore, was found only in the South Indian Ocean Central water.

Plans have been made at the Laboratory for the second long-line fishing cruise of the Anton Bruun, to sample conditions during the northeast monsoon season, from January through March 1964. This cruise will provide important material for comparing seasonal changes in the abundance of the large, open-sea fishes and in the distribution of the water types in which they live.

Data on the catches of the Anton Bruun and of the Japanese commercial tuna vessels fishing in the Indian Ocean will be combined with the oceanographic data collected by all ships participating in the International Indian Ocean Expedition in a joint study by scientists from the Honolulu Laboratory and the Nankai Regional Fisheries Research Laboratory, Kochi, Japan. This study should lead to an understanding of the relationship between the distribution and abundance of the tunas and billfishes and the ocean current systems of the Indian Ocean. (U.S. Bureau of Commercial Fisheries, Biological Laboratory at Honolulu, Scientific News Notes, October 1963.)

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#### INDIAN OCEAN EXPLORATIONS BY THE "ATLANTIS II" COMPLETED:

The Woods Hole Oceanographic Institution research vessel Atlantis II was one of the major United States vessels participating in the wide-ranging International Indian Ocean Expedition, involving some 25 countries and 44 vessels. The Atlantis II, which left its home port in July 1963, completed its observations in November and returned to Woods Hole, Mass., late in December 1963. Although a wide variety of observations were made during the cruise, the main task of the Atlantis II was to obtain data on the physical movements of the water in the western half of the Indian Ocean.

The chief scientist on the Atlantis II during the cruise said, "It's far too early to generalize on our findings, but we have learned that it is a very complex ocean, and we did accomplish what we set out to do. . .to get a comprehensive view of the Indian Ocean during one of the monsoon seasons."

The important Somali Current, which sweeps up the eastern coast of Africa at a speed in excess of four knots, was revealed

to be considerably wider and deeper than previously supposed. The Atlantis II scientists measured it to be some 150 miles wide and 1,000 meters deep, with the total water transport about one-fifth that of the great Gulf Stream off the east coast of the United States.

The area of the Somali Current also has a considerable upwelling of colder water and nutrients from the bottom. In air temperatures of 32.2° C. (90° F.), surface temperatures of the stream were recorded at around 15.6° C. (60° F.). They might be expected to be about 27° C. (80.6° F.) without the influence of the stream. Just to the east of the Somali Current, there appears to be a more shallow counter current running southward; with another northward current just to the east of it.

Another interesting feature of the cruise of the Atlantis II was the relatively slight rainfall encountered. July to September is the traditional rainy season on the continent of India with the prevailing winds sweeping generally to the northeast from the ocean. At sea, however, the rainfall was quite slight during the entire cruise.

As could be expected, the data collected raised many questions. For instance, why is the Arabian Sea so rich in nutrients? What causes the complex water movements observed? What is the reason for the double oxygen minimum layer found all over the area? And does the relatively less saline water found in certain places imply a closed circulatory system involving both meteorological and oceanographic phenomena?

Techniques applied in the collection of data included the use of drift bottles for surface current measurements, as well as other devices that were tracked near the bottom and at middle depths. The important upper layers of the ocean waters were analyzed for temperature and salinity, and temperatures down to around 100 fathoms were measured by the bathythermograph while the ship was underway. The temperature structure of deeper waters, along with water samples for analysis, were obtained by lowering Nansen bottles at spaced intervals on steel cables.

A program of meteorological investigations was conducted in cooperation with the U.S. Weather Bureau. Radio-sonde observations were made daily. Also, the phenomena of evaporation, precipitation, solar radiation, humidity, and other meteorological factors were measured aboard ship.



In addition, technicians conducted a program of continuous echo-sounding to chart the bottom configuration of the areas covered. Some biological data were obtained to study the effects of the monsoon winds on the productivity of the waters. Other investigations involved an experimental radio navigation system, computations of the wave power spectra, rain water chemistry, and measurements of magnetic fields.

Starting from Bombay, India, the Atlantis II criss-crossed the western half of the Indian Ocean working its way south. Its major ports of call were Colombo, Ceylon; Zanzibar, Tanganyika; Seychelles Islands; Diego Suarez, Madagascar; Port Luis, Mauritius and Lourenco Marques, Mozambique.

The Atlantis II is scheduled to return to the Indian Ocean in 1965 for additional observations. Other Woods Hole Oceanographic Institution participation in the International Indian Ocean Expedition includes meteorological observations by scientists from a four-engine aircraft, and a cruise to the area early in 1964 by the research vessel Chain, principally for geophysical studies.

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#### NEW RESEARCH VESSEL TO BE ACQUIRED BY DUKE UNIVERSITY:

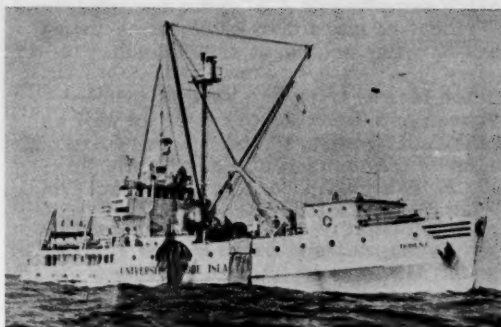
The National Science Foundation has provided funds for a new research vessel for the Duke University Marine Laboratory, Beaufort, N. C., according to reports. The vessel should be delivered in the summer of 1964. Its first cruise is tentatively scheduled for July 30, 1964. It will accommodate 15 to 26 scientists as well as up to 15 crewmen. Its over-all length will be 117½-feet, with an average displacement of 474 tons and a range of 4,500 to 5,000 nautical miles.

The new vessel should contribute to improved observational coverage and over-all knowledge of the continental shelf between Chesapeake Bay and the area off Georgia. (National Oceanographic Data Center, Newsletter, October 31, 1963.)

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#### RESEARCH VESSEL "TRIDENT" COMPLETES FIRST YEAR OF OPERATION:

During its first year of operation, the University of Rhode Island (URI) research vessel Trident logged more than 30,000 miles, com-



University of Rhode Island research vessel Trident.

pleted 11 scientific cruises, and spent 201 days at sea. The 180-foot, vessel carried 53 members of the URI Graduate School of Oceanography, as well as faculty members from other Universities, on expeditions ranging from Block Island Sound off Rhode Island to the West Coast of Africa.

"Operation DEBUT," the University's first cruise with the Trident, began September 15, 1962, in California, when a group of scientists and the crew took over the former Army maintenance and supply vessel, which was built in 1944 at a cost of \$1.2 million. (The U. S. Office of Naval Research spent an additional \$300,000 in converting the vessel.)

In the maiden cruise down the Coast of Central America through the Panama Canal and on to Providence, R. I., via Bermuda, scientists initiated open ocean bacteriological studies and began investigations of the form, structure, and organic functions of certain seaweed. In November 1962, the Trident was used for geological work in Block Island Sound. In mid-January 1963, a cruise was cut short because of mechanical problems.

On March 22, 1963, the vessel put to sea for its longest cruise. Ports of call included Bermuda; Monrovia, Liberia; and Sierra Leone. Operating off the west coast of Africa; bottom cores were taken, bottom sediments were sampled, the floor of the ocean was photographed, and numerous other projects were completed before returning to Narragansett Bay nearly three months later. One other cruise by the research vessel was conducted in June, plus 2 more in July, and 2 in August. In September, she cruised through the Sargasso Sea. At the beginning of October 1963, a scientific party equipped with an electronic

plankton sampling device began a voyage on the Trident of more than 2,000 miles to a point 300 miles southeast of Bermuda.

In the future, trips are planned to the Caribbean and the coast of Spain, as well as into the Gulf Stream, where it is hoped new techniques can be used to measure the flow of water. (National Oceanographic Data Center, Newsletter, October 31, 1963.)

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#### SEA BOTTOM OF THE CARIBBEAN AREA UNDER STUDY:

Geophysical events of the past 50 million years in the Caribbean Sea area were undergoing intensive study in late 1963 by scientists of the Woods Hole Oceanographic Institution aboard the 218-foot research vessel Chain.

From earlier land-based studies made on the island of Hispaniola, which includes Haiti and the Dominican Republic, it was determined that adjacent parts of the earth's crust in that area have behaved differently during this vast stretch of time. The crust under the eastern third of the Dominican Republic and eastward to Puerto Rico has remained relatively stable during this time. To the west, however, strong faulting and crustal warping was active and appears to be continuing today.

The chief scientist on the Chain cruise said that the objective of the present investigations is to determine the extent of these two areas of diverse crustal behavior by extending the previous landbased observations to a study of the crust under the sea.

The scientists used a variety of oceanographic instruments for the study. One key part of the investigation was the continuous measurement of the earth's gravity in the area, which varies to a minute but detectable degree depending on the thickness of the crust and its composition. To perform this job, a new shipboard data processing system was employed that automatically samples, computes, and records information on the ship's navigation, the depths of the ocean, and the gravity and magnetic fields of the earth.

The shape of the sea floor was studied by recording and measuring echo reflections from sounding equipment on shipboard. Bottom photography was employed as a means of obtaining a better idea of the sea floor composition by visual observation of undisturbed con-

ditions. Another technique to be used was a number of measurements of the flow of heat into the ocean from the earth, which is another indication of crustal activity.

The cruise, which was sponsored by the U. S. Navy's Office of Naval Research, was expected to last about six weeks. (Woods Hole Oceanographic Institution, December 2, 1963.)



#### Pollution

##### POTOMAC RIVER FISH LOSSES:

The Interstate Commission on the Potomac River Basin (ICPRB) reported that a technical conference by 13 agencies of Maryland and Virginia and the ICPRB had reached the tentative conclusion that the massive fish kill in the lower Potomac River and the Chesapeake Bay in mid-1963 was probably caused by a disease peculiar to white perch, the fish most affected by the kill. Vigorous study of possible bacterial and viral causes was recommended. (Sport Fishing Institute, Bulletin, November 1963.)

Note: See Commercial Fisheries Review, September 1963 p. 43.



#### Shellfish

##### LAKE ERIE SHELLFISH MAY HAVE COMMERCIAL VALUE:

Studies by biologists of the U. S. Bureau of Commercial Fisheries in Sandusky Bay, Lake Erie, have revealed the presence of substantial numbers of the Japanese snail and fresh-water mussels. The large live-bearing snails are highly prized by aquarists. Whether there is sufficient demand to warrant a small fishery is yet to be determined.

In addition to the Japanese snail, at least 12 species of fresh-water mussels were collected in Sandusky Bay. Efforts are underway to determine their abundance and suitability for use in making core pellets for the culture pearl industry. There is an excellent demand for fresh-water mussel shells for the Japanese pearl industry. As a result of the decline in Tennessee River fresh-water mussel shell production, buyers are seeking other sources of supply in the United States for the several thousand tons of shells needed each year.

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## Shrimp

## UNITED STATES SHRIMP SUPPLY INDICATORS, NOVEMBER 1963:

Item and Period	1963	1962	1961	1960	1959
..... (1,000 Lbs., Heads-Off) .....					
<b>Total landings, So. Atl. and Gulf States:</b>					
December .....	-	8,615	6,538	7,099	8,716
November .....	13,200	11,604	9,996	14,454	12,412
October .....	21,872	14,699	12,686	21,688	19,601
September .....	18,195	13,182	9,691	18,832	18,330
January-August ..	75,188	57,739	52,474	78,961	71,600
January-December ..	-	105,839	91,396	141,035	130,660
<b>Quantity canned, Gulf States 1/:</b>					
December .....	-	1,879	816	894	1,173
November .....	2,400	2,727	2,175	1,535	2,122
October .....	4,180	4,454	2,065	2,480	2,324
September .....	3,640	1,727	598	2,222	1,936
January-August ..	16,961	12,423	8,846	19,263	15,104
January-December ..	-	23,210	14,500	26,394	22,659
<b>Frozen inventories (as of end of each mo.) 2/:</b>					
December 31 .....	-	31,577	19,755	40,913	37,866
November 30 .....	3/	27,500	20,668	37,264	37,334
October 31 .....	4/ 37,418	21,315	17,811	31,209	33,057
September 30 .....	4/ 27,356	12,843	13,361	24,492	26,119
August 31 .....	4/ 24,803	12,754	12,728	20,171	23,780
July 31 .....	4/ 25,460	13,677	14,849	17,397	22,352
June 30 .....	4/ 24,047	13,796	19,416	15,338	19,283
<b>Imports 5/:</b>					
December .....	-	15,798	15,442	12,411	10,611
November .....	-	17,964	14,852	13,516	10,269
October .....	-	18,279	16,813	14,211	15,340
September .....	10,236	9,696	8,629	8,190	7,541
January-August ..	90,085	79,446	70,546	65,091	62,794
January-December ..	-	141,183	126,268	113,418	106,555
... (¢/lb., 26-30 Count, Heads-Off) ...					
<b>Ex-vessel price, all species, So. Atl. &amp; Gulf Ports:</b>					
December .....	-	82.9	75.2	54.2	48.4
November .....	6/ 52-65	84.5	73.5	54.0	46.2
October .....	6/ 52-62	90.0	68.7	53.0	44.4
September .....	6/ 55-61	90.9	70.1	52.2	46.4
August .....	6/ 57-71	83.6	66.1	52.0	46.9
July .....	63.5	82.1	55.8	54.6	49.2
June .....	77.0	84.4	53.7	64.1	60.7
May .....	80.9	83.7	52.8	62.9	63.3
<b>Wholesale price frozen, brown (5-lb. pkg.) Chicago, Ill.:</b>					
December .....	-	101-107	91-92	68-70	64-66
November .....	71-78	105-110	89-92	69-73	60-65
October .....	67-75	108-115	83-90	69-73	59-62
September .....	73-77	113-118	87-90	65-70	62-64
August .....	75-81	110-112	76-81	64-67	62-64
July .....	80-97	3/	70-75	72-77	62-74
June .....	95-102	102-104	67-72	76-77	73-74
May .....	98-103	96-103	67-69	74-77	70-76

1/ Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3. The figures in the section (Quantity canned, Gulf States) have been completely revised beginning with February 1963 on the basis of a new conversion factor (formerly 33.0 pounds per case).

2/ Raw headless only; excludes breaded, peeled and deveined, etc.

3/ Not available.

4/ Inventory of June 30, 1963, includes 667,000 pounds; July 31, 1963, includes 925,000 pounds; August 31, 1963, includes 1,011,000 pounds; September 30, 1963, includes 2,868,000 pounds; and October 31, 1963, includes 1,203,000 pounds for firms not reporting previously.

5/ Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.

6/ Range in prices at Tampa, Fla.; Morgan City, La.; area; Port Isabel and Brownsville, Texas, only.

Note: Data for 1963 are preliminary. November 1963 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



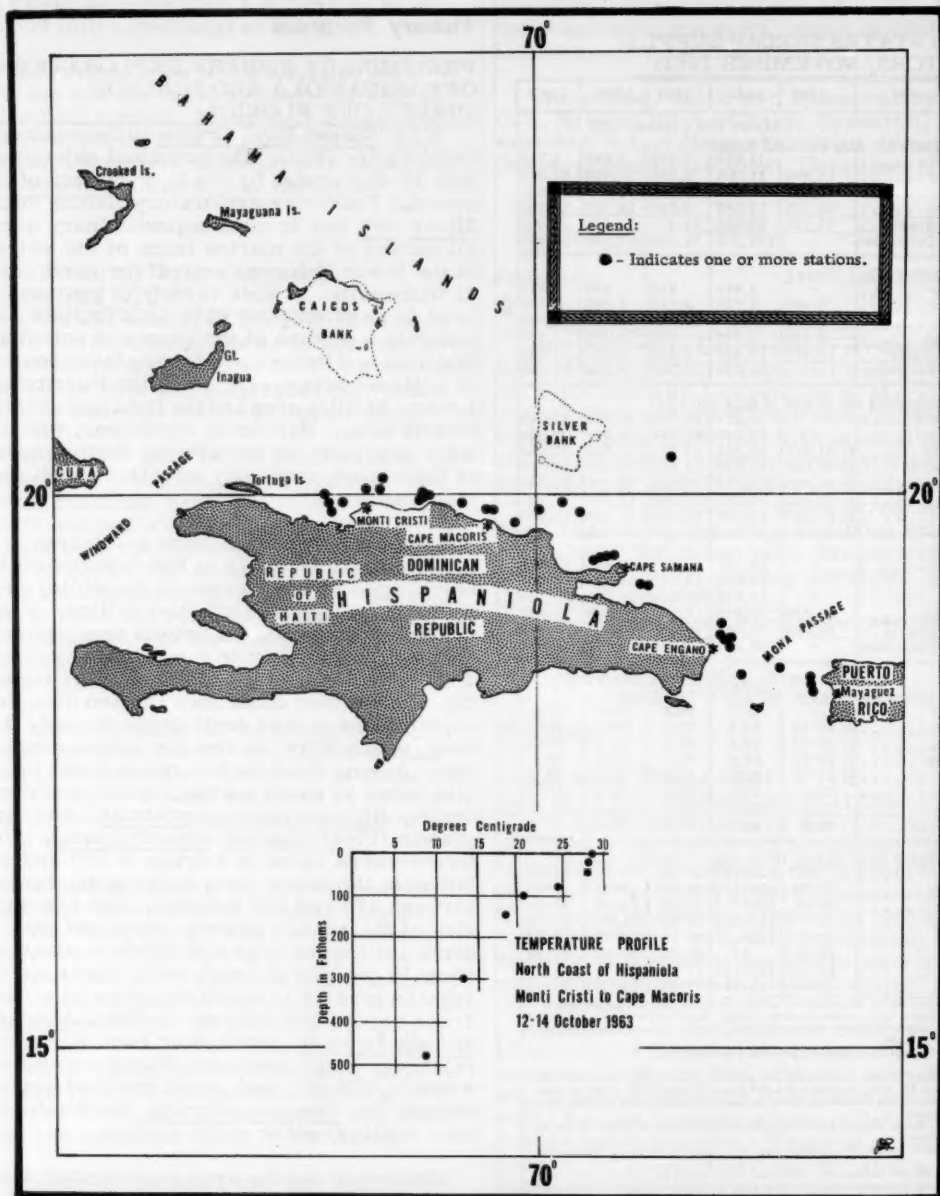
## South Atlantic Exploratory Fishery Program

## PRELIMINARY FISHERY EXPLORATIONS OFF HISPANIOLA AND SCALLOP SURVEY OFF FLORIDA:

M/V "Silver Bay" Cruise 50 (September 25-October 26, 1963): The principal objective of this 32-day cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay was to make a preliminary overall survey of the marine fauna of the waters in the lower Bahamas and off the north coast of Hispaniola. A wide variety of gear was used in an attempt to gain as complete as possible a picture of the resource potential of that area and its role in affecting the resources in adjacent areas--including the Puerto Rico-Lesser Antilles area and the Bahamas-Florida Straits area. Hurricane conditions, which were prevalent or threatening during much of the cruise, seriously interfered with the investigation.

Shrimp trawl drags were made over a total depth range of 25 to 800 fathoms off the north coast of the Dominican Republic, and in the Mona Passage off Puerto Rico. From 110 to 800 fathoms, the bottom was generally soft mud and subject to a moderate gradient. This provided conditions suitable for trawling, but weather conditions limited dragging explorations in that depth range to only 14 tows, which were too few for proper evaluation. Among the possible commercial species taken in small amounts were royal-red shrimp (Hymenopenaeus robustus) and scarlet prawns (Plesiopenaeus edwardsianus). The former were taken in 2 drags in 350 and 400 fathoms; the latter were taken in all drags between 170 and 800 fathoms. The average size of the scarlet prawns increased with depth until those near 800 fathoms counted 10 to 15 per pound (heads-on). Other shrimp species present in small numbers in a few drags beyond 100 fathoms included Aristaeomorpha foliacea, which have been taken in relatively large numbers elsewhere in the western Atlantic, and an unidentified penaeid resembling Penaeus schmitti, the South American shallow-water white shrimp.

Shallower depths were investigated with dredge and trawl gear, but were marked by very rugged bottom topography and heavy concentrations of coral, rock, and sponge, indicating a general unsuitability for commercial fishing with conventional trawls. Commercial



Areas investigated off Hispaniola (with temperature profile) during Cruise 50 of the M/V *Silver Bay*.

species of shrimp were present in small numbers in less than one-third of the drags made in 25 to 100 fathoms.

Two 60-hook tuna long-line sets were made off the north coast of the Dominican Republic along the 1,500-fathom isobath. The resulting



total catch consisted of four whitetip sharks. Sampling of surface and subsurface resources was also conducted with midwater trawls, plankton and larval trawls, and suspended wire fish traps. The catches were preserved for scientific study. Trolling lines set whenever the vessel was running between stations, took small numbers of dolphin, rainbow runners, and barracuda. Despite careful bridge watch, no surface fish schools were seen during the cruise.

Throughout the area surveyed off Hispaniola, bottom temperatures averaged lower than at equal depths in areas farther north and south. The fauna was distributed bathymetrically at correspondingly deeper levels, thereby adding additional evidence of the importance of temperature as an environmental factor in marine distribution.

The first part of the cruise included a brief re-survey of the scallop potential on the Florida east coast scallop bed. Thirty-two scallop stations were sampled between Bethel Shoals and Cape Canaveral in the 15 to 50 fathoms depth range. Catches of young scallops, 25 to 35 millimeters (0.98 to 1.18 inches) in width, ranged from 0.1 to 4.0 bushels per 30-minute drag (average 0.6 bushel) at 20 of the stations. This was indicative of the strong year-class of scallops which should reach commercial size during 1964. Catches of commercial size scallops ranged from 0.2 to 2.5 bushels per 30 minute drag (average 1.1 bushels) at 10 of the stations. Those scallops yielded approximately 85 meats per pound and the best catches were made in 27 fathoms off Cape Canaveral.



## Tuna

### AGE-GROWTH STUDIES OF BLUEFIN TUNA LANDED IN CALIFORNIA:

The California Department of Fish and Game's expanded bluefin tuna research program includes an assessment of the age composition of the California catch. Scales were chosen for preliminary age determination studies because they were easy to collect, process, and read, compared to such structures as otoliths and vertebrae.

Although untreated scales usually are difficult to read and require much individual handling, some difficulties were resolved by eosin staining, cleaning with potassium hydroxide, and using automatic tissue-process-

ing equipment. Crossing-over of circuli in the lateral fields and their crowding in the anterior field were diagnosed as annuli. Although scales from small fish exhibited crossing-over, this characteristic seldom was found in large fish because the lateral fields were obscured by scale thickening and circuli erosion. Scales from the caudal peduncle usually were clear and their annuli distinct compared to scales from beneath the second dorsal fin, although these were generally satisfactory.

The initial study included 247 bluefin tuna ranging from 51 to 142 centimeters (20.1 to 55.9 inches) fork length, collected from commercial landings at Terminal Island, Calif., during 1961 and 1962. An effort was made to sample 10 fish in each interval of 1 centimeter (0.394 inch), but several groups were not represented completely. About 50 percent of the samples could not be read because the scales were blistered, saturated with oil, or otherwise disfigured.

Length of Bluefin Tuna in Age Groups I through V Years				
Age Group	Mean Length		Length Range	
Years	Cms.	Ins.	Cms.	Ins.
0 . . . . .	57.10	22.50	51-69	20.1-27.2
I . . . . .	72.08	28.40	54-92	21.3-36.2
II . . . . .	90.65	35.72	77-112	30.3-44.1
III . . . . .	106.95	42.14	100-128	39.4-50.4
IV . . . . .	128.50	50.63	124-135	48.9-53.2
V . . . . .	142.00	55.95	142	55.9

Apparently bluefin grow rapidly, increasing in length about 15 to 21 centimeters (5.9-8.3 inches) per year. The mean length at each age compares reasonably well with length-frequency modes determined from market sampling. But additional corroborative evidence, such as growth records from tagging experiments, and serial collections of larval and juvenile fish, is needed. (California Department of Fish and Game, May 1963.)



## United States Fisheries

### COMMERCIAL FISHERY LANDINGS, JANUARY-SEPTEMBER 1963:

**Total Landings:** Fish and shellfish landings in the United States the first 10 months of 1963 were down 16 percent as compared with the same period of 1962. Landings were about 633 million pounds less than in 1962--due mainly to reduced catches of menhaden, ocean perch, Atlantic herring, and Alaska salmon.

**Menhaden:** Landings to October 31, 1963, totaled about 1.6 billion pounds--598 million pounds less than during the same period of 1962. The 10-month production was down in every State.

United States Commercial Fishery Landings of Certain Species for Periods Shown, 1963 and 1962				
Species	Period	1/1963	1962	Total 1962
Anchovies, Calif. 2/	9 mos.	2,200	1,750	2,252
(1,000 Lbs.)				
Cod:				
Maine	8 mos.	1,600	1,740	2,260
Boston 3/	10 "	16,900	19,554	21,213
Gloucester 3/	10 "	2,800	3,156	3,823
Total cod		21,300	24,450	27,296
Haddock:				
Maine	8 mos.	1,600	1,453	2,545
Boston 3/	10 "	69,400	74,663	83,058
Gloucester 3/	10 "	14,100	13,565	16,089
Total haddock		85,100	89,681	101,692
Halibut: 4/				
Alaska	9 mos.	21,800	27,041	27,496
Wash. & Oreg.	9 "	11,000	11,925	12,404
Total halibut		32,800	38,966	39,900
Herring, Maine	9 mos.	130,900	141,807	156,699
Industrial Fish, Me. & Mass. 5/	10 mos.	46,100	29,285	42,741
Mackerel:				
Jack 2/	9 mos.	67,100	43,516	93,414
Pacific 2/	9 "	22,700	25,034	44,980
Menhaden	10 mos.	1,557,300	2,155,458	2,249,900
Ocean perch:				
Maine	8 mos.	46,400	50,800	69,453
Boston	10 "	900	655	909
Gloucester	10 "	39,000	51,051	53,619
Total ocean perch		86,300	102,506	123,981
Salmon, Alaska	1963	214,300	280,000	280,000
Sardine, Pacific	10 mos.	5,700	14,547	15,363
Scallops, sea, New Bedford (meats)	10 mos.	14,200	16,919	19,309
Shrimp (heads-on):				
So. Atl. & Gulf	10 mos.	181,100	136,992	167,804
Washington	9 "	900	1,380	1,400
Squid, Calif. 2/	9 mos.	7,300	7,056	7,056
Tuna, Calif.	10 mos.	248,600	250,444	284,559
Tuna, Atlantic	1963	11,700	7,213	7,213
Whiting:				
Maine	8 mos.	15,900	17,468	17,832
Boston	10 "	100	193	212
Gloucester	10 "	46,400	51,018	53,183
Total whiting		62,400	68,679	71,227
Total all above items		2,798,000	3,435,683	3,736,786
Other 6/		640,300	635,451	1,502,914
Grand total		3,438,300	4,071,134	5,239,700

1/ Preliminary.

2/ Cannery receipts.

3/ Landed weight.

4/ Dressed weight.

5/ Excludes menhaden.

6/ Includes landings for species not listed.

Note: Fish generally converted to round weight, crustaceans to weight in the shell, and mollusks reported in meats only.

**Salmon:** On the basis of the reported pack of canned salmon, it is estimated that the 1963 catch in Alaska was approximately 214 million pounds--about 66 million pounds less than in 1962.

**Shrimp:** There was a significant gain in landings of South Atlantic and Gulf shrimp during the first 10 months of 1963 due to sharply increased landings in the Gulf States. Production in the South Atlantic and Gulf areas totaled

181 million pounds--an increase of 44 million pounds or 32 percent over the same period in 1962.

**Tuna:** Landings (including bonito) in California amounted to nearly 252 million pounds at the end of October 1963--about the same as in 1962. Atlantic Coast landings in 1963 amounted to 11.7 million pounds as compared with 7.2 million pounds in 1962. Although information on Oregon and Washington landings is not available, it is known that a good run of albacore occurred in the Pacific Northwest, and it is believed that the catch exceeded the 9.2 million pounds in 1962.

**Ocean Perch:** During the first 10 months of 1963, landings at Gloucester, Mass., totaled 39 million pounds--down about 12 million pounds from 1962--while Maine landings for the first 8 months of 1963 were 46 million pounds--a decrease of over 4 million pounds.

**Mackerel:** Pacific mackerel landings through September 1963, amounted to 23 million pounds--down 2 million pounds as compared with the same period in 1962. Landings of jack mackerel (67 million pounds) increased about 24 million pounds.

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## FISH STICKS AND PORTIONS, JULY-SEPTEMBER 1963:

United States production of fish sticks and portions amounted to 37.2 million pounds during the third quarter of 1963, according to preliminary data. Compared with the same quarter of 1962, this was a gain of 2.6 million pounds or 7 percent. Fish sticks (16.4 million pounds) were up 274,000 pounds or 2 percent, and portions (20.8 million pounds) were up 2.3 million pounds or 12 percent.

Cooked fish sticks (15.2 million pounds) made up 93 percent of the July-September 1963 fish stick total. There were 20.1 million pounds of breaded fish portions, of which 16.2 million pounds were raw. Unbreaded portions amounted to 765,000 pounds.

Table 1 - U.S. Production of Fish Sticks by Months and Type, July-September 1963 1/

Month	Cooked	Raw	Total
	..... (1,000 Lbs.) ...		
July	4,487	368	4,855
August	5,425	250	5,675
September	5,335	491	5,826
Total 3rd Qtr. 1963 1/	15,247	1,109	16,356
Total 3rd Qtr. 1962	14,725	1,357	16,082
Total 1st 9 mos. 1963 1/	55,412	3,244	58,656
Total 1st 9 mos. 1962	49,238	3,949	53,187
Total Jan.-Dec. 1962	66,801	5,416	72,217

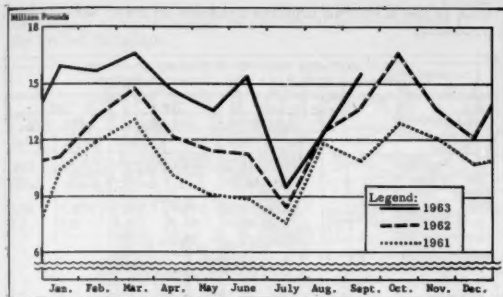
1/ Preliminary.

Table 2 - U. S. Production of Fish Sticks by Areas, July-September 1963 and 1962

Area	1/1963		2/1962	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	21	12,972	22	12,896
Inland & Gulf States	5	1,900	5	1,768
Pacific Coast States	10	1,484	9	1,420
Total	36	16,356	36	16,082

1/ Preliminary.

2/ Revised.



U. S. production of fish sticks and portions, 1961-63.

Table 3 - U. S. Production of Fish Sticks by Months, 1959-1963

Month	1/1963	2/1962	2/1961	1960	1959
(1,000 Lbs.)					
January	7,634	6,082	6,091	5,511	6,277
February	8,246	6,886	7,097	6,542	6,352
March	7,846	6,658	7,233	7,844	5,604
April	6,687	5,719	5,599	4,871	4,717
May	6,165	5,643	5,129	3,707	4,407
June	6,538	5,117	4,928	4,369	4,583
July	4,855	3,740	3,575	3,691	3,790
August	5,675	5,760	6,927	5,013	3,879
September	5,826	6,582	5,206	5,424	5,353
October	-	6,698	6,133	6,560	5,842
November	-	6,305	6,288	6,281	4,831
December	-	6,027	5,618	5,329	4,743
Total	-	72,217	69,824	65,142	60,378

1/Preliminary.  
2/Revised.

Table 4 - U. S. Production of Fish Portions by Months and Type, July-September 1963 1/

Month	Breaded			Un-	Total
	Cooked	Raw	Total	breaded	
	(1,000 Lbs.)				
July	823	3,552	4,375	225	4,600
August	1,149	5,241	6,390	254	6,644
September	1,839	7,453	9,292	286	9,578
Tot. 3rd Qtr. 1963 1/	3,811	16,246	20,057	765	20,822
Tot. 3rd Qtr. 1962	3,059	14,998	18,057	489	18,546
Tot. 1st 9 mos. 1963 1/	11,943	54,917	66,860	2,214	69,074
Tot. 1st 9 mos. 1962	9,875	43,953	53,828	1,554	55,382
Tot. Jan.-Dec. 1962	14,007	62,290	76,297	2,381	78,678
Preliminary					

1/Preliminary.

The Atlantic Coast States remained the principal area in the production of both fish sticks and portions, with 13.0 and 11.0 million pounds, respectively. The Inland and Gulf States ranked second with 2.0 million pounds of fish sticks and 9.1 million pounds of fish portions. The remaining 2.1 million pounds of fish sticks and portions were produced by firms in the Pacific States.

Production of fish sticks and portions during the first 9 months of 1963 totaled 127.7 million pounds--19.2 million

Table 5 - U. S. Production of Fish Portions by Areas, July-September 1963 and 1962

Area	1/1963		2/1962	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	23	10,997	24	9,550
Inland & Gulf States	6	9,117	12	8,328
Pacific Coast States	9	708	8	668
Total	38	20,822	44	18,546

1/Preliminary.  
2/Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1959-1963

Month	1/1963	2/1962	2/1961	1960	1959
(1,000 Lbs.)					
January	8,199	5,077	4,303	3,632	2,692
February	7,383	6,360	4,902	3,502	3,025
March	8,687	7,036	5,831	4,706	3,225
April	8,004	6,408	4,484	3,492	2,634
May	7,411	5,818	3,879	3,253	2,684
June	8,819	6,137	4,039	3,995	3,247
July	4,600	4,679	3,962	4,088	3,227
August	6,644	6,687	4,963	3,558	2,796
September	9,578	7,180	5,745	4,631	3,558
October	-	9,871	6,759	5,275	4,314
November	-	7,406	5,789	4,790	3,483
December	-	6,019	5,191	4,459	3,262
Total	-	78,678	59,847	49,381	37,147

1/Preliminary.  
2/Revised.

pounds above the same period of 1962. Fish sticks (58.6 million pounds) were up 5.5 million pounds (or 10 percent) and portions (69.1 million pounds) increased 13.7 million pounds (25 percent).



## U. S. Fishing Vessels

## DOCUMENTATIONS ISSUED AND CANCELLED, SEPTEMBER 1963:

Table 1 - U. S. Fishing Vessels 1/-Documentations Issued and Cancelled, by Areas, September 1963 with Comparison

Area (Home Port)	Sept. 1963		Jan.-Sept. 1963		Total 1962
	1963	1962	1963	1962	1962
(Number)					
Issued first documents 2/:					
New England	1	2	4	24	28
Middle Atlantic	1	-	4	2	3
Chesapeake	8	3	14	29	43
South Atlantic	8	6	15	37	47
Gulf	24	9	59	87	110
Pacific	3	5	10	115	130
Great Lakes	-	1	1	3	5
Puerto Rico	-	-	-	-	2
Total	45	26	107	297	368
Removed from documentation 3/:					
New England	-	5	38	19	24
Middle Atlantic	1	3	42	31	39
Chesapeake	3	2	16	19	23
South Atlantic	2	4	45	29	38
Gulf	9	15	87	86	104
Pacific	3	4	68	82	111
Great Lakes	2	3	13	18	22
Hawaii	2	-	3	3	3
Puerto Rico	-	-	-	1	1
Total	22	36	312	288	365

1/For explanation of footnotes, see table 2.

During September 1963, a total of 45 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 26 in September 1962. There were 22 documents cancelled for fishing vessels in September 1963 as compared with 36 in September 1962.

Gross Tonnage	Issued 2/	Cancelled 3/
..... (Number) .....		
5-9 .....	8	6
10-19 .....	12	12
20-29 .....	4	2
30-39 .....	6	-
40-49 .....	2	-
50-59 .....	1	-
60-69 .....	3	1
70-79 .....	4	-
80-89 .....	2	-
100-109 .....	-	1
250-259 .....	1	-
530-539 .....	1	-
640-649 .....	1	-
<b>Total .....</b>	<b>45</b>	<b>22</b>

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.  
 2/Includes 3 redocumented vessels in September 1963 previously removed from records.  
 3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.  
 Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

## U. S. Foreign Trade

### AIRBORNE IMPORTS OF FISHERY PRODUCTS, AUGUST 1963:

Airborne fishery imports into the United States in August 1963 were up 28.4 percent in quantity and 22.1 percent in value from those in the previous month. Total airborne imports during January-August 1963 showed an increase of 21.1 percent in quantity and 29.6 percent in value from arrivals in the same period of 1962, due mainly to larger shipments of shrimp and spiny lobsters.

Raw headless shrimp continued to make up the bulk of the airborne shrimp imports--in August 1963, shipments consisted of 1,036,590 pounds of fresh or frozen raw headless and 43,708 pounds of frozen peeled and deveined shrimp. All of the airborne shrimp arrivals in August 1963 entered through the U. S. Customs District of Florida.

Airborne imports of shellfish other than shrimp this August consisted of 116,700 pounds of fresh or frozen spiny lobster products, which entered through the Customs District of Florida, 4,600 pounds of fresh or frozen crabmeat, most of which entered through the Customs District of Laredo (Tex.), and 6,700 pounds of unclassified shellfish.

Airborne imports of finfish in August consisted mainly of fresh or frozen fish fillets from Mexico, France, and British Honduras.

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the

bulk of the airborne imports consists of fresh and frozen products.

Product and Origin <sup>2/</sup>	1963		1963		1962	
	August		Jan.-Aug.		Jan.-Aug.	
	Qty. 3/	Value <sup>4/</sup>	Qty. 3/	Value <sup>4/</sup>	Qty. 3/	Value <sup>4/</sup>
	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000
<b>Fish:</b>						
Mexico .....	17.3	2.9	195.1	56.8	553.2	99.2
British Honduras .....	3.8	0.9	37.7	9.5	8.8	2.2
Honduras .....	-	-	16.5	4.3	-	-
Japan .....	-	-	2.0	6.2	-	-
United Kingdom .....	0.2	0.3	1.8	4.5	-	-
Iran .....	-	-	1.2	7.4	-	-
France .....	4.5	5.5	5.2	6.1	0.3	0.7
Rumania .....	-	-	-	-	1.3	11.3
Panama .....	0.9	0.4	0.9	0.4	7.8	1.3
U.S.S.R. ....	-	-	26.8	70.2	-	-
Canada .....	-	-	-	-	21.3	16.9
Costa Rica .....	-	-	-	-	5.6	0.9
Other countries .....	-	-	0.8	0.3	0.3	0.8
<b>Total Fish .....</b>	<b>26.7</b>	<b>10.0</b>	<b>288.0</b>	<b>167.7</b>	<b>598.6</b>	<b>133.3</b>
<b>Shrimp:</b>						
Guatemala .....	-	-	141.6	74.0	199.6	99.7
El Salvador .....	12.5	7.2	221.6	150.6	410.1	261.6
Honduras .....	77.1	40.4	99.8	52.3	-	-
Nicaragua .....	45.8	13.0	426.0	135.5	977.2	328.6
Costa Rica .....	80.0	38.0	455.0	217.2	262.4	113.1
Panama .....	163.1	85.4	217.7	647.2	1,127.4	594.7
Venezuela .....	701.9	294.3	3,730.3	1,749.3	1,980.1	1,046.3
Ecuador .....	-	-	11.6	39.4	12.2	3.4
France .....	-	-	2.6	0.9	-	-
Mexico .....	-	-	13.2	6.9	24.8	9.1
Netherlands Antilles ..	-	-	-	-	3.1	2.7
<b>Total Shrimp .....</b>	<b>1,080.4</b>	<b>478.3</b>	<b>6,419.4</b>	<b>3,073.3</b>	<b>4,996.9</b>	<b>2,461.2</b>
<b>Shellfish other than Shrimp:</b>						
Mexico .....	10.4	7.4	90.0	52.7	50.6	30.4
British Honduras .....	86.7	78.1	202.2	161.6	141.5	79.8
El Salvador .....	-	-	5.0	3.6	0.8	0.4
Honduras .....	-	-	1.9	1.0	113.0	80.7
Nicaragua .....	27.2	16.7	128.2	79.0	1.2	0.6
Costa Rica .....	-	-	73.8	60.1	1.4	1.2
Jamaica .....	-	-	51.0	40.1	30.0	21.3
Netherlands Antilles ..	-	-	32.8	20.9	15.9	10.0
Colombia .....	-	-	8.0	21.7	1.8	5.1
Ecuador .....	-	-	2.2	1.8	1.6	1.2
Tunisia .....	-	-	0.8	0.9	-	-
Leeward and Windward Islands .....	-	-	1.6	0.5	22.9	8.6
British Guiana .....	-	-	1.7	0.3	-	-
Canada .....	-	-	213.3	109.2	223.4	90.9
Venezuela .....	-	-	13.7	6.0	22.3	13.6
Panama .....	1.5	1.2	1.5	1.2	1.0	1.0
Guatemala .....	-	-	-	-	6.5	4.6
Bahamas .....	-	-	-	-	1.9	0.8
Dominican Republic ..	0.2	0.2	22.2	20.9	7.2	5.4
Yugoslavia .....	-	-	1.3	0.7	-	-
Trinidad .....	-	-	-	-	2.3	1.0
Other countries .....	-	-	2.0	2.9	0.6	1.5
<b>Total Shellfish (except shrimp) .....</b>	<b>128.0</b>	<b>103.6</b>	<b>853.1</b>	<b>585.1</b>	<b>647.9</b>	<b>358.1</b>
<b>Grand Total .....</b>	<b>1,235.1</b>	<b>591.9</b>	<b>7,560.5</b>	<b>3,826.1</b>	<b>6,243.4</b>	<b>2,952.6</b>

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.  
 2/When the country of origin is not known, the country of shipment is shown.  
 3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.  
 4/F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.  
 Note: These data are included in the over-all import figures for total imports, i.e., these imports are not to be added to other import data published.  
 Source: United States Airborne General Imports of Merchandise, FT 380, August 1963, U. S. Bureau of Census.

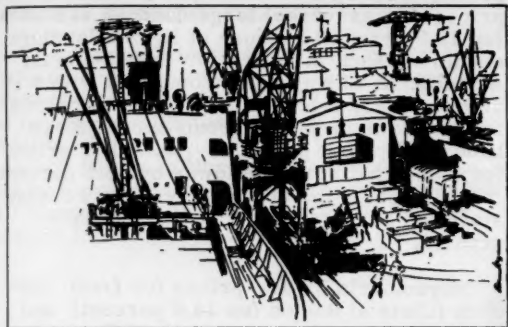
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### EXPORTS OF EDIBLE FISHERY PRODUCTS, SEPTEMBER 1963:

Exports of processed fish and shellfish from the United States in September 1963 were up 81.3 percent in quantity



and 133.3 percent in value from those in the previous month due mainly to much larger shipments of canned salmon to the United Kingdom.



Compared with the same month in 1962, the exports in September 1963 were up 16.0 percent in quantity and 90.9 percent in value. The gain in volume was limited by a sharp drop in exports of canned sardines not in oil which partly offset generally higher shipments of most other canned fish export items.

U. S. Exports of Edible Fishery Products, September 1963  
with Comparisons

Item	QUANTITY				VALUE			
	Sept.		Jan.-Sept.		Sept.		Jan.-Sept.	
	1963	1962	1963	1962	1963	1962	1963	1962
	..(Millions of Lbs.)..				..(Millions of \$) ..			
Fish & Shellfish:								
Processed only:								
(excluding fresh & frozen)	2.9	2.5	22.9	23.7	2.1	1.1	10.6	9.9
/ Includes pastes, sauces, clam chowder and juice, and other specialties.								

Processed fish and shellfish exports in the first 9 months of 1963 were down 3.3 percent in quantity but up 7.1 percent in value from those in the same period in 1962. The decline in quantity was due mainly to lower shipments of canned sardines and a drop in exports of canned mackerel to the Congo Republic. There were increases in exports of the higher-priced canned salmon and canned shrimp, as well as larger shipments of canned squid. Although not covered in the table, exports of frozen shrimp were up sharply in the first 9 months of 1963 (increase mostly in exports to Japan), and there was a substantial increase in exports of frozen salmon.

Source: *United States Foreign Trade* (Trade by Commodity), Summary Report FT 930-E, September 1963, U. S. Department of Commerce.  
Note: The quantity of U. S. imports of fishery products is not currently available in summary form.

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#### IMPORTS OF CANNED TUNA UNDER QUOTA:

United States imports of tuna canned in brine during January 1-November 2, 1963, amounted to 43,462,313 pounds (about 2,069,634 std. cases), according to data compiled by the Bureau of Customs. This was 8.3 percent less than the 47,404,873 pounds (about 2,257,375 std. cases) imported during January 1-November 3, 1962.

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1963 at the 12½ percent rate

of duty is limited to 63,130,642 pounds (or about 3,006,221 std. cases of 48 7-oz. cans). Any imports in excess of the quota are dutiable at 25 percent ad valorem.

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#### IMPORTS OF FISH MEAL AND SCRAP BY CUSTOMS DISTRICTS, SEPTEMBER 1963:

U. S. Imports of Fish Meal and Scrap by Customs Districts, September 1963

Customs Districts	September 1963
	Short Tons
Maine and New Hampshire	460
New York (N. Y.)	578
Massachusetts	185
Maryland	1,758
North Carolina	937
Georgia	3,145
Mobile (Ala.)	9,399
Galveston (Tex.)	8,829
Los Angeles (Calif.)	2,643
San Francisco (Calif.)	2,978
Washington	2,125
Dakota	190
Duluth (Minn.) and Superior (Wis.)	435
Michigan	375
Florida	518
Other Customs Districts	111
Total	34,666

Note: A list of the entry ports included within each Customs District is given in Schedule D, Code Classification of United States Customs Districts and Ports, which may be obtained free of charge by writing to the Foreign Trade Division, Bureau of the Census, U. S. Department of Commerce, Washington, D. C. 20233.

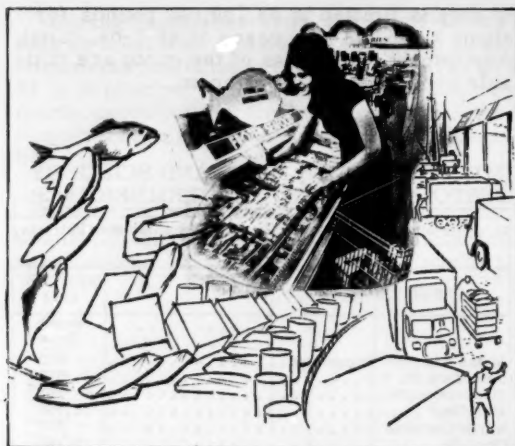


#### Wholesale Prices

##### EDIBLE FISH AND SHELLFISH, NOVEMBER 1963:

Wholesale prices for edible fish and shellfish (fresh, frozen, and canned) moved slightly downward in November 1963. At 106.1 percent of the 1957-59 average, the November index was lower than the previous month by 0.7 percent. While prices were up or down for specific items in most of the subgroups, the over-all index drop was largely due to more extensive marketing of lower-priced frozen halibut and salmon as a substitute for very light supplies of the fresh product, as seasonal fishing for those species neared an end. Compared with November 1962 (when prices with few exceptions were higher for all products), the index for November 1963 was down 10.3 percent.

From October to November, the drawn, dressed, or whole finfish subgroup index was down 3.8 percent and was lower than in No-



vember 1962 by 3.1 percent. Prices at New York City for western dressed halibut and salmon in November were considerably lower than in October because of the seasonal mar-

ket transition from the fresh product to the frozen product. Those lower prices were partly offset by a substantial increase in prices for ex-vessel large haddock at Boston (up 19.9 percent) because of lighter landings, and an advance in prices for Lake Superior whitefish at Chicago. As compared with November 1962, prices in November were lower for all items in the subgroup except large haddock (up 43.0 percent). November prices for frozen halibut were lower by 25.1 percent from the same month a year earlier because stocks in cold storage were substantially greater.

November's higher prices for fresh haddock fillets at Boston (up 14.9 percent) and shucked standard oysters at Norfolk were responsible for an 0.6-percent increase from the previous month in the subgroup index for processed fresh fish and shellfish. But those higher prices in November were offset by lower prices for fresh shrimp (down 2 cents a pound at New York). During November fresh haddock fillets were higher-priced (up

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, November 1963 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1967-59=100)			
			Nov. 1963	Oct. 1963	Nov. 1963	Oct. 1963	Sept. 1963	Nov. 1962
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					106.1	106.8	107.1	118.3
<b>Fresh &amp; Frozen Fishery Products:</b>					109.0	110.0	110.6	123.7
<b>Drawn, Dressed, or Whole Fish:</b>					117.0	121.6	125.6	120.8
Haddock, lge., onshore, drawn, fresh	Boston	lb.	.16	.13	124.7	104.0	98.5	87.2
Halibut, west., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.33	.44	97.1	129.9	128.6	129.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.89	.95	124.0	132.7	138.0	134.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.56	.53	83.6	78.3	100.7	100.7
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.46	.51	75.3	83.5	99.9	88.5
<b>Processed, Fresh (Fish &amp; Shellfish):</b>					107.2	106.6	104.3	124.0
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.54	.47	131.1	114.1	104.4	99.5
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.73	.75	85.0	87.9	83.2	121.9
Oysters, shucked, standards	Norfolk	gal.	7.75	7.63	130.7	128.6	130.7	130.7
<b>Processed, Frozen (Fish &amp; Shellfish):</b>					98.6	97.5	97.4	120.7
Fillets, Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.40	98.9	100.1	100.1	103.9
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.38	.39	111.4	114.3	105.5	107.0
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.34	.34	119.2	118.4	117.5	118.3
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.76	.73	89.5	86.0	90.1	128.7
<b>Canned Fishery Products:</b>					101.2	101.7	101.4	109.4
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.25	23.50	101.3	102.4	104.6	111.1
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	10.88	10.88	96.8	96.6	96.6	104.4
Mackerel, jack, Calif., No. 1 tall (16 oz.), 48 cans/cs.	Los Angeles	cs.	5.75	5.75	97.5	97.5	97.5	2101.6
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.84	8.84	113.3	113.3	102.1	119.4

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/One commodity has been dropped in the fishery products index as of December 1962--"Sardines, Calif., tom. pack, No. 1 oval (15-oz.), 24 cans/cs."--and replaced by "Mackerel, jack, Calif., No. 1 tall (15-oz.), 48 cans/cs." Based on Calif. sardines and not directly comparable with replacement (jack mackerel) for January-November 1963.

31.6 percent) than a year earlier, but fresh shrimp prices were down sharply (30.3 percent)--the subgroup index dropped 13.5 percent from November 1962.

The subgroup index for processed frozen fish and shellfish rose 1.1 percent from October to November but was 18.3 percent lower as compared with the same month a year earlier. Lower prices for flounder and small haddock fillets in November were cancelled out by a price increase for frozen shrimp (up 4.1 percent). In the face of high November shrimp inventories and Gulf shrimp landings

that were still at a good level, the advance in frozen shrimp prices at Chicago may be attributed in part to trading in shrimp futures on the commodity exchange in that city.

Slightly lower November prices for canned pink salmon were wholly responsible for a 0.5-percent drop in the price index for canned fishery products from October to November. Prices for other items in the subgroup were unchanged from October. As compared with November 1962, prices for all canned fishery products were lower in November 1963 and the subgroup index was down 7.5 percent.





## International

### FISHERY AGREEMENTS

#### GREEK-TURKISH FISHERY COOPERATIVE PROPOSED:

In a move to end the disputes between Greek fishing vessels and Turkish coastal patrols, the Greek Government was reported to have proposed the establishment of a joint Greek-Turkish Fishery Cooperative. Each country would supply half of the Cooperative's fishing fleet, which would be free to operate in waters between Greece and Turkey. If the Greek catch should exceed the Turkish catch, as a result of an imbalance in the number or capacity of the vessels supplied, Turkey would have the right to supply the Cooperative with a compensatory volume of fish caught in other Turkish waters. The proposed joint fleet would number about 1,000 vessels and would produce an estimated 5,000 metric tons a year, which would be marketed in both countries. A joint fund would be set up to finance fish processing by the Cooperative.

Turkey rejected a previous Greek proposal that Greek fishermen be permitted to buy licenses from the Turks for fishing rights outside a two-mile limit in Turkish waters. (United States Embassy, Athens, October 11, 1963.)

### FOOD AND AGRICULTURE ORGANIZATION

#### WORKING PARTY ON ATLANTIC OCEAN TUNA RESOURCES MEETS IN ROME:

A special Working Party on the Rational Utilization of Tuna Resources in the Atlantic Ocean was convened by the Food and Agriculture Organization (FAO) of the United Nations in Rome, Italy, October 25-30, 1963. The United States Delegation consisted of Dr. J. L. McHugh, Bureau of Commercial Fisheries, United States Department of the Interior, Chairman; Mr. Fred E. Taylor, Deputy Special Assistant for Fisheries and Wildlife to the Under Secretary of State; Dr.

W. M. Chapman, Director, Van Camp Foundation; and Mr. Charles R. Carry, California Canners Association. Official delegations attended from Brazil, France, Japan, Nigeria, Portugal, and Spain. Observers were present from the Federal Republic of Germany and from Italy.

The Working Party selected the following officers: Dr. J. L. McHugh, United States, Chairman; Sr. Fernando Lozano Cabo of Spain, and Mr. A. Takashiba of Japan, Vice-Chairmen; Dr. W. M. Chapman, United States, Rapporteur. A Steering Committee was appointed to consist of the Chairman, the two Vice-Chairmen, Capt. Paulo de Castro Moreira da Silva of Brazil, and Mr. E. N. C. Eziuzo of Nigeria. The Secretariat was provided by the Fisheries Division of FAO.

As world demand for protein food from the sea has increased, the Atlantic tuna fisheries have grown rapidly. Tuna fisheries have been prosecuted in the Atlantic by countries such as Spain, Portugal, France, and Norway for many years. However, since 1956, the total catch has more than doubled (from less than 100,000 to about 200,000 short tons) as a result of increased fishing and demand for tuna by Japan, the United States, Brazil, Nigeria, Senegal, and other nations. Already there are some indications that certain tuna resources in the Atlantic may be overfished. These circumstances led the Council of FAO, by resolution at its 40th Session in June 1963, to establish the Working Party.

No comprehensive and coordinated scientific studies nor adequate statistics on catches and fishing effort are being conducted for the Atlantic tuna resources as a whole. The Working Party agreed that such studies are needed urgently and outlined the kinds of investigation that are necessary.

The Working Party was not entirely in agreement as to the kind of organization best suited to conduct the work. Some delegations



## International (Contd.):



Dr. J. L. McHugh, Bureau of Commercial Fisheries, Fred Popper and Horacio Rosa, Fisheries Division of FAO. FAO Working Party on Rational Utilization of Tuna Resources in the Atlantic Ocean, Rome, Italy, October 25-30, 1963.

wished to confer the necessary authority on an existing international organization. Others, including the United States, believed that a new organization should be established under an international convention among interested nations. It was agreed, however, that no appropriate organization now exists which has the authority to cover the broad area of the ocean in which tuna fisheries operate. It was agreed also that, whatever kind of organization was given the necessary authority, the areas and resources to be considered should be the entire Atlantic Ocean and its tunas and certain related species of fish. The Working Party recommended also that the relationship of this organization to FAO should be governed by Article XV or other appropriate Articles of the FAO Constitution.

The Report of the Working Party, together with its background documents, will be circulated to interested member nations and appropriate international organizations for review and comment. When comments have been received and collated, they will be forwarded to the interested parties. At that time a second session of the Working Party might be considered necessary. It was the opinion of the Working Party, however, that a second

session probably will not be necessary. Therefore, it would be appropriate for one or more nations to call a conference of plenipotentiaries, to take whatever action is deemed appropriate and necessary.

#### INTERNATIONAL ASSOCIATION OF FISH MEAL MANUFACTURERS

#### PERUVIAN ANNUAL CONFERENCE STRESSES QUALITY:

The 4th Annual Conference of the International Association of Fish Meal Manufacturers was held in Lima, Peru, October 28-31, 1963. This private organization of associations representing the fish meal industry and individual manufacturing companies was organized in 1960 and has its headquarters in England.

Some 250 delegates and observers participated in the Conference, representing fish meal interests in some 17 countries (Argentina, Chile, Japan, and Mexico were represented only by observers), and there were observers from the Food and Agriculture Organization (FAO) and the Fish Meal Exporters Organization.

The United States delegation consisted of 18 representatives of 7 private companies and the Assistant Director of the College Park (Md.) Technological Laboratory, U.S. Bureau of Commercial Fisheries.

Peru is represented in the Association by the Sociedad Nacional de Pesqueria (National Fisheries Society), which acted as host to the 4th Annual Conference. There were 29 Peruvian delegates in the list of participants, plus 127 observers, as well as several advisers, members of a scientific committee, and a secretariat.

## International (Contd.):

Daily sessions of the Conference were held, beginning with the Inaugural Session on October 28, with the President of the Republic and several Cabinet Ministers in attendance. The opening address was made by the President of the National Fisheries Society, followed by the President of the Association. The President of Peru spoke briefly, and declared the Conference opened. A "Formal Session constituting the Annual General Meeting of the Association" was followed by a Marketing Meeting on October 29, and a General Session was held on October 30. The public meetings were largely given over to expressions of views by delegates on agenda items, with no recommendations or conclusions being announced. There were, in addition, meetings of a Scientific Committee and of the Executive Council, the latter being open only to members. The definitive business of the Conference appears to have been handled at closed-door "work sessions" of the Executive Council, the results of which were not made public.

The work of the Conference was summarized by the Association's retiring President, at the closing session on October 31, as follows:

- (1) The Conference considered the improvement and standardization of quality of fish meal in order to improve the industry.
- (2) A study of economic aspects of the industry was undertaken—the need for expanded markets, stability of prices, pricing in line with competing products, and promotion of sales through advertising and education of potential users. The prosperity of the industry seems to be assured, but there must be cooperation among manufacturers and every effort must be made to eliminate speculators and speculation. Reference was made to a report on the industry commissioned by the Association which will form the basis of an economic survey of the industry, to be continued from year to year.
- (3) Improvement of marketing fish meal throughout the world, with special emphasis on sales promotion, was discussed. The industry has developed more quickly than marketing methods, which should be improved. Producers in various countries seem prepared to exchange ideas and give impetus to a study of improved methods.
- (4) Fish meal and fish flour for human consumption was perhaps the most significant subject of the Conference. It seemed to be the consensus of the Conference that fish meal as it is now made, if it were produced under hygienic conditions, could be used as a basis for human food. This would be a cheaper and more readily available product for the vast task of feeding the increasing populations of the world than more refined fish protein concentrate. Its use in this way would also result in a greatly expanded market for fish meal. The valuable cooperation of the Food and Agriculture Organization, especially in the study of fish protein, was acknowledged. Fish meal manufacturers should be encouraged to do their own research looking to improvement of conditions under which their product is made.

In closing, the Association's President expressed the view that the 4-year old Association has done much for the fish meal industry, but that its strength depends upon the support it receives from its members, including free discussion and exchange of information, attendance at conferences, and full representation on the organization's scientific and executive committees, whenever and wherever they meet. He announced that the Chilean delegation proposed, upon its return to Santiago, to make formal application for membership in the Association. The membership of Chile, a growing factor in the fish meal industry, will strengthen the voice of the Association in the world.

The Conference was closed by the Peruvian Minister of Agriculture, who pledged the support of the Peruvian fish meal industry in promoting sales, advertising uses of the product, achieving better quality, in conservation practices,

in stabilizing prices, and in the scientific studies that are important for the development of the use of fish meal for human consumption. (United States Embassy, Lima, November 5, 1963.)

## INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION

### TENTH ANNUAL MEETING HELD IN VANCOUVER:

The Minister of Fisheries of Canada was the principal speaker at the opening session of the Tenth Annual Meeting of the International North Pacific Fisheries Commission which opened in Vancouver, B.C., on November 18, 1963.

The meeting brought together representatives of Japan, the United States, and Canada. These nations are signatories to a 10-year old fishing treaty which continues to lay down the ground rules for certain activities of their fishermen in the North Pacific.

The Annual Meeting reviewed progress in research on the high seas, considered recommendations for halibut fishing regulations in the eastern Bering Sea and studied the problems of protecting halibut stocks in the Gulf of Alaska endangered by the rapidly expanding trawl fisheries in that region. The Annual Meeting also reviewed qualification of certain fish stocks for continued abstention. Under the terms of the existing agreement, Japan refrains from fishing salmon and halibut in the eastern North Pacific and herring off the coast of British Columbia.

Prior to the beginning of the Annual Meeting, scientists from each of the member nations met in Vancouver for two weeks to analyze the results of research on the high seas.

The Annual Meeting held at Vancouver had no connection with new treaty negotiations begun in Washington, D. C., in June 1963 and continued in Tokyo in September which are to be resumed in Ottawa in the spring of 1964. The present treaty will continue in force, as it has for the past ten years, until it is either terminated by one year's notice from any member or replaced, by mutual agreement, by a new treaty.

## ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

### FISHERIES COMMITTEE MEETS:

The eighth session of the Fisheries Committee of the Organization for Economic Co-

## International (Contd.):

operation and Development (OECD) was held in Paris, France, on October 14-15, 1963. Significant agenda items for this meeting included (1) an examination of a preliminary report of a study of Government subsidies and other financial support to the fishing industries of member countries, and (2) the 1963-1964 detailed program of work.

A large portion of the discussion was taken up with the examination of detailed appraisals of the different subsidy reports submitted by member countries. After the examination, the Committee instructed the Fisheries Committee Secretariat to prepare a revision of the subsidy study taking into account the various amendments adopted at the meeting. The revised version will be circulated to the respective governments in advance of the next OECD Fisheries Committee meeting.

In its examination of the detailed program of work for 1963-64, the Committee considered the work in progress on a number of studies including General Services to the Fishery Industry, Price Systems, Influence of Recent Changes in Customs Tariffs on Fishery Products, Harmonization of Studies on Costs and Earnings in Fisheries, and Training of Fishermen.

The next OECD Fisheries Committee meeting is scheduled for January 1964.

## NORTH PACIFIC FISHERIES COMMISSION

## REDUCTION OF HALIBUT QUOTA FOR TRIANGLE AREA RECOMMENDED:

The International North Pacific Fisheries Commission, (Canada, Japan, and the United States) concluded its Tenth Annual Meeting in Vancouver, B.C., on November 23, 1963. The Commission made decisions and recommendations on a number of questions affecting North Pacific fishing operations by the three countries. These recommendations will not take effect until approved by the member Governments.

Approximately 100 administrators, scientists, technical and industrial advisors, and observers took part in the work sessions, which covered a period of three weeks.

The Commission did not recommend any change in the list of stocks of fish which Japan refrains from fishing under the terms of the Convention. Therefore, Japanese fishermen will continue to refrain from fishing salmon in waters east of 175°W. longitude, halibut in the eastern North Pacific Ocean except in the Bering Sea, and herring off the west coast of Canada, except in the waters west of the Queen Charlotte Islands.

The Commission reviewed the results of the first year of its responsibility for management of the halibut fishery in the quota area of the eastern Bering Sea. During the season in this area, which lasted from March 25 to October 15,

1963, fishermen of the three nations very nearly attained the quota recommended by the Commission. The total catch was 10,944,000 pounds, of which Canadian fishermen took 4,058,000 pounds, Japanese fishermen took 3,670,000 pounds, and the United States fishermen took 3,216,000 pounds.

All members of the Commission agreed that the available evidence indicated that the 1964 quota in the eastern Bering Sea halibut quota area should be sharply reduced from the 1963 level. The Commission will recommend to its member Governments that the 1964 quota be 6,393,340 pounds. Starting dates and other arrangements will remain substantially the same as in 1963, although improvements will be made in the operation of the quota system. The season will close when the quota is attained, or on October 15, 1964, whichever is earlier.

The research program on halibut in the eastern Bering Sea will be continued and expanded.

The Commission embarked several years ago on an ambitious program of preparation of a comprehensive scientific report on the distribution and origin of salmon on the high seas. The first two volumes of this report have now been published and the remaining seven volumes are in advanced stages of preparation.

The Commission established a program of research and collection of data to go into effect in the event that any Japanese fishing for herring off the west coast of the Queen Charlotte Islands is undertaken. There is no indication of the establishment of such a fishery at present.

Japanese spokesmen informed the Commission that there will be no radical increase in Japanese trawling in the Gulf of Alaska in 1964. In 1963 Japan operated a maximum of four trawlers in the area. While there is no restriction in the Convention on fishing by Japan for other species of groundfish in this area, Japanese fishermen are required to abstain from taking halibut. The method and scale of Japanese trawling operations in the Gulf, plus the requirement of returning to the sea any incidentally-caught halibut, are expected to minimize effects of this fishery on the halibut stocks. Research on the problems and exchange of scientists and data will be continued. (International North Pacific Fisheries Commission, news release, November 23, 1963.)

## WHALING

## FAO APPEALS FOR VOLUNTARY LIMITS ON ANTARCTIC CATCH:

The Director General of the Food and Agriculture Organization (FAO) has appealed to whaling countries to voluntarily limit their catches of fin whales to 5,000 whales during the 1963/64 season which opened on December 12, 1963. He stated in a letter to the International Whaling Commission (IWC), that its recent quota reduction from 15,000 blue whale units last season to 10,000 for 1963/64 would be "completely ineffective as a conservation measure" for fin whales.

The Director General's letter continued, "Any serious attempt to reach the new quota will further reduce the stock of fin whales and delay the time when, even by the application of stringent conservation measures, those stocks can be rebuilt to a level at which they can sustain economic yields. . . I am making this appeal because of the need for preventing

## International (Contd.):

further and perhaps irreparable damage to the whale stocks and in the hope of enabling your Commission to make effective regulations in line with scientific evidence for the rational exploitation of this important resource--the only sizable commercial resource of the Antarctic Ocean."

For many years, the IWC limit on the total Antarctic catch has been 15,000 blue-whale units. Under this system, 1 blue whale is the equivalent of 2 fin whales, 2½ humpbacks, or 6 sei whales. The Chief of the Biology Branch of FAO's Fisheries Division said that most of the whales commercially caught in the Antarctic are fin whales; to achieve this season's quota of 10,000 units would mean catching as many as 16,000 fin whales in the coming season. He also said that merely to maintain the present sustainable yield of fin whales would mean catching fewer than 5,000 of them annually for a few years. (Food and Agriculture Organization of the United Nations, Rome.)



## Angola

## FOREIGN TRADE IN FISHERY PRODUCTS, 1962:

**Exports:** Angola's exports of processed fishery products in 1962 were down sharply from those in the previous year--shipments of fish meal declined 35 percent in quantity and 18 percent in value, and exports of dried and salted fish dropped 29 percent in quantity and 31 percent in value. The decline was not offset by the gain in exports of lower-valued fresh and frozen fish.

Italy was the leading buyer of Angola's fish meal in 1962 with 15,054 metric tons, followed by West Germany with 8,411 tons, Portugal with 2,399 tons, Austria with 1,983 tons, Poland with 1,717 tons and, France with

1,036 tons. Shipments to other countries accounted for the remaining 1,992 tons.

Angola's most important markets for dried and salted fish in 1962 were the Congo Republic which absorbed 5,614 tons and Mozambique which bought 5,307 tons.

**Imports:** Angola's leading fishery import is dried cod and arrivals totaled 2,338 tons valued at Esc. 42.9 million (US\$1.5 million) in 1962, compared with 2,039 tons valued at Esc. 37.7 million (\$1.3 million) in the previous year. Norway was the leading supplier of dried cod in 1962 with 1,303 tons, followed by the United Kingdom with 995 tons. (United States Embassy, Leopoldville, October 31, 1963.)

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## FISHERIES TRENDS, NOVEMBER 1963:

The Government of Ceylon has purchased 1,500 tons of dried fish from Angola, of which 30,000 bags were exported from Benguela and 20,000 bags from Mocamedes, valued at about US\$227,500. The transaction was the first entry into the Asian market from Angola.

Exports from Porto Alexandre during September 1963 amounted to 391.7 metric tons of fish meal to Italy, valued at 1,752 contos (US\$60,665); 66.1 tons to Southern Rhodesia, valued at 642 contos (\$22,230); 66.1 tons to Lisbon, valued at 1,152 contos (\$39,889); and 19.4 tons of dried fish to the Congo valued at 103 contos (\$3,566), plus 46.5 tons of semi-dried fish valued at 253 contos (\$8,760). Plans have now been approved to electrify the port at a cost of approximately \$700,000. (United States Consulate, Luanda, November 13, 1963.)

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## FISHERY LANDINGS SHARPLY LOWER FOR FIRST HALF OF 1963:

During the first half of 1963, landings of fish in Angola amounted to only 84,558 metric tons--down sharply from the landings made

Angola's Principal Fishery Exports, 1961-1962

Commodity	1962			1961		
	Quantity Metric Tons	Value		Quantity Metric Tons	Value	
		Esc. 1,000	US\$1,000		Esc. 1,000	US\$1,000
Fish meal . . . . .	32,592	110,510	3,827	50,339	134,799	4,668
Fish oil . . . . .	2,655	5,858	203	3,001	8,897	308
Dried and salted fish . .	13,412	80,384	2,783	18,866	116,234	4,025
Canned fish . . . . .	1,630	23,048	798	1,775	24,596	852
Fresh & frozen fish . . .	19,079	15,052	521	1,229	4,915	170



## Angola (Contd.):

in the similar periods of 1961 and 1962. Total landings for the year 1962 amounted to 269,280 tons as compared with 241,465 tons in 1961. The shortage of fish along Angola's coast continued into the third quarter of 1963. Indications were, as of mid-November, that the 1963 fish landings would be about the lowest on record. (United States Consulate, Luanda, November 20, 1963.)



## Australia

## JAPANESE TAKE MEASURES TO STOP DAMAGE TO FISHING GEAR:

The Australian Minister for External Affairs announced on November 14, 1963, the successful outcome of representations to the Japanese Government over recent incidents involving damage by Japanese fishing boats to the fishing gear of Australian fishermen off the coast of New South Wales.

The matter had been taken up with the Japanese Government at the request of the Australian Department of Primary Industry after incidents in which lobster pots and other gear were damaged by drifting Japanese long-line fishing gear. The Australian minister announced he had been informed by the Japanese Embassy in Canberra that the Japanese

advised the Department of External Affairs that similar warnings and information had been sent to the major Japanese tuna and bonito fishing associations.

A newspaper article which appeared subsequent to the Foreign Minister's announcement stated that Japanese Embassy officials denied reports that Japan was willing to pay compensation for lobster pot losses totaling about £A2,000 (US\$4,480) caused by the drifting tuna long-lines. The newspaper account reported a Japanese Embassy spokesman as saying the payment of compensation had not been discussed with the Australian Government, and that more talks would be held. (United States Embassy, Canberra, November 21, 1963.)



## Canada

## BRITISH COLUMBIA CANNED SALMON PACK LOWER IN 1963:

The pack of canned salmon in British Columbia in 1963 of about 1.2 million cases was down 35.5 percent from the 1.8 million cases packed in 1962. It was also lower by about 13.0 percent from the 1958-1962 five year average pack of close to 1.4 million cases. The pack from year to year is usually dependent on the cycle years for pink and sockeye salmon. However, in 1963 a tie-up of the

British Columbia Canned Salmon Pack, 1958-1963

Species	1963	1962	1/1961	1/1960	1/1959	1/1958
.....(Standard Cases--48-1-Lb. Cans).....						
Sockeye (red) .....	157,747	297,717	398,236	226,912	256,388	1,074,305
Spring (king) .....	9,940	7,174	7,927	5,935	15,703	10,550
Steelhead .....	770	815	979	530	871	1,205
Bluebacks .....	11,361	12,097	12,527	23,345	10,114	11,103
Coho (silver) .....	145,692	175,638	234,047	69,237	215,098	120,424
Pink .....	757,087	1,188,661	661,458	219,658	458,747	451,802
Chum (keta) .....	118,309	134,483	95,400	87,884	138,865	230,636
Total .....	1,200,906	1,816,585	1,410,574	633,501	1,095,786	1,900,025

1/ Totals are based on final revised figures.

Source, Chief, Economics Branch, Pacific Area, Canadian Department of Fisheries.

Fisheries Agency has notified all Japanese fishing vessels known to be operating off the Australian east coast to exercise every caution in their operations. To prevent the recurrence of similar incidents, Japanese fishing boats have also been provided with information about the areas in which Australian fishing gear is set. The Japanese Embassy

salmon fishermen between July 15 and August 3 during a period of good fishing for both pink and sockeye salmon undoubtedly contributed to the lower canned salmon pack.

Note: See *Commercial Fisheries Review*, January 1963 p. 79; February 1962 p. 59; January 1961 p. 57.

\* \* \* \* \*

Canada (Contd.):

#### FISHERIES DEVELOPMENT PROGRAM PROPOSED:

Provincial representatives from throughout Canada were scheduled to attend a conference in Ottawa on January 20, 1964, to discuss proposals for a National Fisheries Development Program. The Provincial Government of Newfoundland has pressed for such a program, having submitted proposals to the Federal Government in February 1963 for additional Federal investment in the fishing industry.

The proposals due to be discussed in Ottawa called for a Canadian National Fisheries Development Program costing over C\$200 million. This would include a Federal investment in Newfoundland of about \$52.5 million (\$10.5 million per year for 5 years) which would supplement an investment of \$25 million (\$5 million for 5 years) by the Provincial Government of Newfoundland.

Based upon the pattern of Federal agricultural programs, the proposed program for Newfoundland follows:

(1) Producer marketing organizations to provide price stability and to enter into international commodity agreements. A salt cod marketing board similar to the wheat board would be created (cost \$5 million).

(2) Credit facilities to increase productivity similar to the Farm Improvement Loan Act and Farm Credit Act (cost \$50 million).

(3) Marketing research and expansion with self-liquidating export credits for salt fish like those used to promote grain sales (cost \$3 million).

(4) Rural fishing community developments like those provided under the Agricultural Rehabilitation and Development Act (cost \$5 million).

(5) Establishment of federal standards, grading, and inspection to improve fish quality (cost \$4 million).

The report which outlines these proposals stresses that Canada is the only important fishing nation in the world that does not have a national fishery development program. (United States Embassy, Ottawa, October 31, 1963.)

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#### LONG-LINING BOOSTS NOVA SCOTIA'S SWORDFISH LANDINGS IN 1963:

Nova Scotia swordfishermen had good catches during the 1963 season, but ex-vessel prices were sharply lower. Swordfish landings were up by 300 percent over 1962, but the value increased by only about 10 percent.

A spokesman for the Canadian Department of Fisheries says it was simply a matter of supply and demand. The average price paid for swordfish in 1962 was about 45 cents a pound, but in 1963 it dropped to about 17 cents.

The main factor in the bigger catch of swordfish is the shift to the long-line fishing method. The baited hook method came into common use in 1962 and the swordfish catch has soared. While traditional harpooning is still used, the greatest number of swordfish are caught by the newer method.

Record catches were reported from all parts of Nova Scotia. The vessel Margaret M. landed 250 swordfish at Sydney in one trip. What is considered a record by a swordfishing vessel in the 65-foot class was established by the Caress II, with 207 fish in one trip.

More than 3,000 swordfish were landed at North Sydney by offshore vessels in August 1963, and good catches also were reported at Glace Bay, Lockeport, and Barrington Passage.

Provincial fisheries officials, who have sponsored the new technique of long-lining for swordfish, are confident that the lower prices which the consumer will pay for swordfish will result in the building up of a much bigger market, thus creating a bigger demand to offset the lower prices offered the fishermen. (Canadian Fisherman, November 1963.)

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#### NEW BRUNSWICK FISHERMEN TO ENTER EAST COAST PURSE-SEINE FISHERY FOR TUNA:

The Industrial Development Section of the Federal-Provincial Atlantic Fisheries Committee (formerly known as the Vessel and Gear Section) met November 13-14, 1963, in the city of Quebec.

The meeting reviewed the progress in various fields such as new types of fishing craft and fishing gear and methods and processing facilities ashore. One of the major develop-

## Canada (Contd.):

ments is the purse seine fishery for tuna along the Atlantic coast.

Discussed at a previous meeting of the Section and by the Committee as a whole, this project has now come to fruition. New Brunswick has gone ahead with two vessels of special design with the object of establishing a C\$1.0 million-a-year commercial tuna fishery in Charlotte County on the Bay of Fundy.

Two 92-foot steel stern trawler-seiners have been provided for two groups of Campobello Island fishermen at a cost of \$300,000 each under a Federal cost-sharing program. Agencies participating include the New Brunswick Fishermen's Loan Board, the New Brunswick Government, the Federal Department of Fisheries, and the Federal Government.

With a crew of 20 men, the vessels, Green Waters and Blue Waters, were built at Bathurst, N.B. They are equipped with the latest in navigation and fish-detection devices.

The two vessels are expected to transport 200 tons of skipjack and bluefin tuna every two weeks to a converted sardine cannery at Eastport, Maine.

This is Canada's first venture into the tuna fishery on the Atlantic Coast. Some United States fishermen have been successful in this fishery, and as a result the Atlantic provinces of New Brunswick and Nova Scotia became interested. (Canadian Fisherman, November 1963.)

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#### NEW FISH-PROCESSING PLANTS FOR MARITIME PROVINCES:

The subsidiary of a large east coast Canadian fisheries company is constructing a new fish-processing plant in Lunenburg, Nova Scotia, which is designed to handle about 80 million pounds of fish a year. The fishing fleet will also be expanded. The total cost is estimated at C\$8 million with completion expected in early 1964.

Another new \$3 million plant capable of processing 30 million pounds of fish a year is to be built at Canso, Nova Scotia. Completion is scheduled for early 1965.

The Premier of Prince Edward Island has announced that a \$5-6 million fish-processing plant would be built at Georgetown. The cost will be shared by the Provincial Government and an unnamed Canadian-Norwegian company. Construction is expected to start in the spring with completion of the first stage of the project scheduled for the fall of 1964. (United States Embassy, Ottawa, October 30, 1963.)

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#### NEWFOUNDLAND FISHERMEN TO BENEFIT FROM NEW SHORE FACILITIES:

A C\$450,000 program to construct 23 additional community facilities in Newfoundland fishing ports to provide winter employment, and at the same time improve handling and processing facilities for inshore fishermen, was announced on November 27, 1963, by the Canadian Fisheries Minister and the Minister of Fisheries for Newfoundland.

The community facilities are for processing and handling salt or fresh fish, and are made available to all the fishermen using the ports in which they are built. The locations will be decided upon through consultation with the provincial government, which is jointly sponsoring the project. Employment will be spread over a wide area. The province will provide the sites, supervise construction, maintain the buildings and equipment, and administer the facilities when they are completed. The Federal government will pay for the actual construction, which will employ local labor and materials.

Sixteen of the facilities, at an estimated cost of \$25,000 each, will provide salt fish processing facilities; the other 7, which will cost in the neighborhood of \$5,000 each, will be for the handling of fresh fish.

At present there are 30 community facilities along the Newfoundland coast. (Information Service, Department of Fisheries, Ottawa, November 27, 1963.)

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#### NEWFOUNDLAND SWORDFISH LONG-LINING EXPERIMENTS SUCCESSFUL:

New long-lining techniques for catching swordfish on Newfoundland's Grand Banks and other areas have been successful. The Newfoundland Department of Fisheries experimental and demonstration vessel Beinir landed

## Canada (Contd.):

293 swordfish at a processing plant in Harbour Grace, Newfoundland, in the early fall of 1963. The big fish were filleted, frozen, and wrapped in cheesecloth for sale to the United States market.

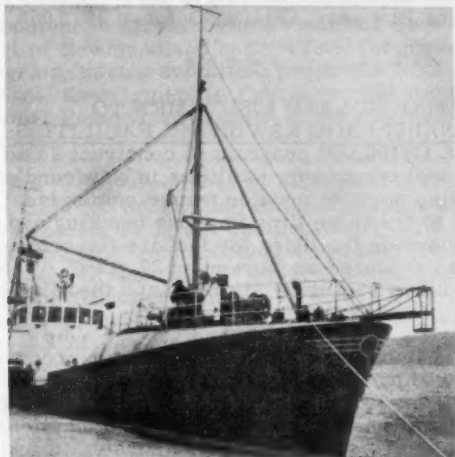


Fig. 1 - The fishing vessel, *Beinir*, used in experimental and demonstrational fishing for swordfish by the Newfoundland Department of Fisheries.

The *Beinir*'s latest catch was taken from Banquereau and the western end of the Grand Banks in 7 fishing days. The weight of the landed catch, which had been dressed at sea, was 58,662 pounds, an average of slightly over 200 pounds per fish. The crew of 11 men received about C\$400 each for the 12-day trip.

In the course of her exploratory operations, the *Beinir* is collecting information on water temperatures and it has been established that swordfish are found only in water of 60° F. or higher. Also being charted is the course the fish take. The species apparently travels from the Cape Cod area in the spring to the fishing banks off Nova Scotia and Newfoundland and returns in the fall.

After discharging at Harbour Grace, the vessel left on another swordfishing venture, in the hope of gathering more data and another bumper catch.

The vessel's skipper says the 200-ton Norwegian built *Beinir* (117 feet long) is ideally suited for swordfishing, as she is big



Fig. 2 - Some of the *Beinir*'s catch of swordfish being unloaded at a Harbour Grace, Nfld., processing plant.

and sturdy enough to ride out storms. He thinks that a vessel of that type would best be used in the halibut fishery for the first two months of each year, and thereafter in the swordfishery as long as possible. (*Trade News*, a publication of Canada's Department of Fisheries, October 1963.)

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#### PROCESS FOR DEHYDRATING FISH-POTATO MIXTURE DEVELOPED:

A process developed by the Canadian Food Research Institute of the Department of Agriculture for producing instant fish-potato flakes is now being given a full-scale commercial test.

The Industrial Development Service of the Department of Fisheries has purchased and installed the necessary equipment at the fish processing experimental plant located at Valleyfield on Newfoundland's northeast coast, and the first product has already come off the production line.

In the semicommercial pilot plant operation, steps are now being taken to test and improve the product.

The engineering staff of the Industrial Development Service has devised a series of tests to determine optimum operating conditions. These deal with such things as establishing the best proportion of fish to potato since the ratio of these two can be varied over a wide range as tests have already indicated. The optimum ratio is dictated by many factors such as the workability of the wet mixture with the equipment, taste, food value, and especially, economics.

The process involves the dehydration of a mixture of cooked fish and cooked potatoes on an external type drum dryer. The final product consists of snowy white, fine dry flakes, each flake containing fish and potato. However, both are so homogeneously blended that the individual ingredients are undetectable to the human eye. These flakes will reconstitute readily with the addition of water or other liquids.

At Valleyfield, a study will also be made of the various kinds of fish suitable for the process. Most of the work



## Canada (Contd.):

done to date has been on cod and it has been clearly demonstrated that this species is entirely satisfactory from a production standpoint.

Also, preliminary runs using salted cod have yielded a product which should find ready acceptance with the consumer.

The flakes have already been used in a variety of dishes. Their capacity to absorb moisture instantaneously makes them exceptionally well suited to making instant fishcakes. The simple addition of water or milk, and seasoning to taste, provides the reconstituted product. Only heating is required before eating. Deep fried fish croquettes, fish soup or chowder, and fish casseroles have been prepared in the Department's test kitchen.

Preparation of the product involves processing the two main ingredients separately. In the present method, the fish is filleted, cooked and ground. The potatoes are peeled, cooked, and diced. Both ingredients are mixed and additives are incorporated into the mash at this stage. The mash is spread mechanically on the outside of a steam-heated dryer.

The thin layer which adheres to the heated surface remains in contact on the hot drum for about 20 seconds and is scraped off the drum by a special blade in a continuous sheet. The sheet, approximately 10 thousandths of an inch thick, is broken into approximately 1/2-inch flakes.

This instant product is a very high protein food and it appears that it will have good keeping qualities. It is extremely light, an important consideration in shipping, and in an emergency could be eaten dry without reconstitution--hence, its importance as a ration or emergency food.

Contrasted with fish flour, which is white, odorless, and without fish flavor, this product maintains the identity of fish fiber and fish flavor.

Besides refining the process, the pilot plant operation will provide information on the cost of production. Also, samples are being produced for wide distribution to prospective manufacturers. (Canadian Fisherman, November 1963.)



## Chile

FISHERIES TRENDS, NOVEMBER 1963:

The prolonged delay in the return of anchovies to Chilean northern coastal waters is of major concern to the expanding fish reduction industry. The dynamic growth of this industry in the north has made fisheries a real factor in the country's economy.

In three years, exports of fish meal have increased from US\$1.7 million in 1960 to \$7.9 million in 1962, and of fish oil from \$344,000 to \$1 million in the same years. In the first six months of 1963, exports of fish meal and fish oil totaled \$7.8 million. Anticipated earnings for the year, however, were being lowered in view of the loss of six weeks of fishing prior to November 9. All available fish meal was sold and a number of

firms were concerned over their ability to meet deliveries against December contracts.

The weather continued to be unseasonably cold in early November. It was said that the temperature of the coastal waters must rise 30°-50° C. (5.4°-9.0° F.) before the anchovies are likely to return in abundance.

The agreement establishing a Fisheries Development Institute was signed by the Government of Chile and the United Nations Development Fund on August 31, 1963. The plan of operation is designed to establish a permanent organization able to provide the technical basis for accelerated development and rational exploitation and use of Chile's fisheries resources. The United Nations Special Fund will contribute some \$1.3 million (about one-third) to the financing of the 5-year project. The Special Fund, through the Food and Agriculture Organization, also will provide the Project Manager (International Director) and other experts and consultants required to carry out the approved work program. (United States Embassy, Santiago, November 9, 1963.)



## Colombia

BILL ESTABLISHING TERRITORIAL WATERS AT 200 MILES PASSES HOUSE:

A bill establishing Colombia's territorial waters at 200 miles was approved (September 12, 1963) by unanimous vote in the House of Representatives and in October 1963 was being considered in a Senate committee.

The only legislation concerning Colombia's territorial sea now on the books is Law 14 of 1923, which states that for the exploitation of undersea hydrocarbon deposits and fishing the territorial sea should be understood as 12 miles.

In the two recent Law of the Sea Conferences held under United Nations auspices, Colombia held two different positions. In the First United Nations Conference on the Law of the Sea at Geneva in 1958, the Colombian delegation supported a proposal establishing a 12-mile territorial sea. In the Second Law, of the Sea Conference in 1960, Colombia supported a joint United States-United Kingdom-Canadian proposal fixing the territorial sea at

## Colombia (Contd.):

6 miles, plus 6 miles of contiguous waters for fishing rights, and recognizing "historic" fishing rights for a period of up to 10 years. Colombia had reserved the right to oppose the original tripartite proposal in which historic fishing rights of other countries were included on a more or less permanent basis.

In order to explain Colombia's reasons for its change in policy between the First Conference and the Second Conference, the then Foreign Minister issued a communique on March 2, 1960. The communique stated that Colombia had been pleased with the results of the First Conference since the conventions adopted constituted almost a complete code of international maritime law. It noted that this codification could be completed with the adoption of a territorial sea convention, and that this would be a practical and positive step in accordance with the United Nations Charter in the sense that it would organize mores according to law. The declaration stated that Colombia, therefore, would show its sincerity in adhering to these principles by voting for the United States-sponsored compromise proposal, which appeared to have the best chance of being approved. In addition, the document continued, the proposal guaranteed the exploitation of resources existing within 12 miles, "... which seems reasonable and sufficient for the expressed purposes." The communique also noted that the proposal did not "obstruct or weaken the traditional principle of freedom of the high seas." It said that "this would suffer detriment if large extensions of sea and overhead air space were to lose the character of free zones which they have always had." It added that exclusive control over large maritime zones would increase the obligations and responsibilities of the coastal state in direct proportion to the width of these zones. Mentioning the problems of security and individual and collective defense, the declaration indicated that the aforementioned proposal was one which would equitably and fairly reconcile the different points of view which had thus far been proposed.

On September 14, 1961, a conservative Colombian Senator presented Proyecto de Ley 138 which called for the establishment of Colombia's territorial sea at 12 miles at low tide. The bill was strongly supported by the Foreign Minister who reintroduced it in the Senate during the special sessions of 1962.

The bill was passed by the Senate by a large majority on April 13, 1962. In defending the Government's change of policy on this issue, the Foreign Minister said that the 3-mile limit recognized by the United States was "inconvenient to Colombia." However, the 12-mile limit, he went on, "was the universal current and convenient to Colombia." He noted that Panama and Venezuela both had 12-mile limits and that Colombia could not be placed in a position of inferiority vis-a-vis her neighbors.

No further action was taken on the 12-mile bill in the House of Representatives. Meanwhile, the opposition introduced a counter bill in the House which called for a 200-mile limit.

During the Spring of 1963 various proposals were put forth concerning the definition of Colombia's territorial sea. The Chairman of the House Foreign Affairs Committee added his sponsorship to the 200-mile bill; the Armed Forces proposed a 12-mile limit with 100 miles of contiguous sea; and fishing interests proposed a 12-mile limit with a contiguous sea varying from 100-160 miles. At the same time, the influential six-man Foreign Ministry Advisory Committee was convoked by the Ministry of Foreign Relations in the hope that it could agree upon a position.

The Chairman of the House Foreign Affairs Committee was successful in pushing through the 200-mile bill in his House committee in August 1963, and the same bill was carried unanimously by the full House on September 12. Hearings on that bill were being conducted by the Senate Foreign Affairs Committee. (United States Embassy, Bogota, October 22, 1963.)



## Cook Islands

### PLAN FOR JAPANESE-SUPPLIED TUNA CANNERY REJECTED:

After considerable debate, the Cook Islands Legislative Assembly in September 1963, voted 15 to 6 not to allow Japanese fishermen to land in Rarotonga to supply fish to a tuna cannery.

The question of a Japanese-supplied tuna cannery had been a lively topic in the Cook Islands for over two years, and had been offici-

## Cook Islands (Contd.):

ally supported by the New Zealand Administration. (Pacific Islands Monthly, October 1963.)



## Denmark

**NEW TRADE AGREEMENT WITH SOVIETS MAY INCLUDE FISH FREEZERSHIPS:**

A new Danish-Soviet trade agreement was signed in Moscow on November 22, 1963. It is valid for a period of six years from January 1, 1964 (expiration date of former agreement), and according to preliminary information, envisages an exchange of goods valued at between 225 and 230 million kroner (US\$32.6-33.3 million) annually. However, the Danish Foreign Minister, who signed the agreement for Denmark, emphasized that the new pact is only a skeleton agreement and that the minimum quotas established therein will be subject to annual renegotiation. The agreement includes an offer to Denmark to deliver 19 additional vessels (chiefly fish refrigerator vessels) worth 550-600 million kroner (US\$79.7-87.0 million) during the six-year period.

In reporting the conclusion of the new trade agreement, the Danish press declared that the annual value of trade in the amount of 225-230 million kroner in each direction represents an increase of 35-40 percent. However, under the agreement ending December 31, 1963, which envisaged trade in the neighborhood of 225 million kroner annually, actual imports from the Soviet Union aggregated only 162 million kroner (\$25.5 million) in calendar year 1962 and 124 million kroner (\$18.0 million) in the first 9 months of 1963.

The opportunity of delivering additional vessels is welcomed by Danish shipyards in view of the small amount of orders on hand, although it is realized that actual orders must be obtained in sharp competition with yards in other countries. (United States Embassy, Copenhagen, November 27, 1963.)



## Ecuador

**MANTA FISHING INDUSTRY EXPANDING:**

The fishing industry is steadily gaining importance in Manta's economy. The recent discovery of a rich shrimp fishing area, 6 miles from Manta, was indicated by the presence of some 25 shrimp vessels in Manta's harbor where only tuna vessels were seen in the past. Other evidence of the uptrend in fishing operations includes the construction of about 7 new tuna vessels.

In the industrial fish field, a United States-controlled firm is planning to double its capacity for canning tuna during the coming year. Since the cannery is unable to can all the tuna available, a large part of the tuna catch is sold for freezing and export. The local price of 1,100 sucres per ton (about US\$60.00 at official rate of exchange) for fresh tuna is about one-fourth the fall 1963 price paid in the United States. Despite these operations, tuna fishermen of the Manta area are often unable to sell their catch.

Other interests in the Manta area are actively studying the possibility of establishing additional fish-meal operations in the area.

A new fish-freezing plant has been constructed by the Direccion de Pesca y Caza of the Development Ministry. The freezing plant processes various types of fish which are frozen and flown to Quito and other large inland cities. The manager of the freezing plant agrees that this is a relatively costly operation. One alternative is to purchase trucks capable of transporting frozen fish but the cost per truck of about US\$10,000 is beyond the resources of the freezing plant.

The manager of the freezing plant is engaged in experiments to examine the feasibility of processing fish through drying or salting so as to make essentially cheap fish available to consumers throughout Ecuador. The lack of fresh water apparently has not been a serious problem, as had been supposed, since a good source of salt water suitable for washing fish is available to the plant. (United States Consulate, Guayaquil, November 4, 1963.)

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**SHRIMP PRODUCERS HURT BY LOWER PRICES IN UNITED STATES MARKET:**

The expanding Ecuadoran shrimp export business has suffered a sharp setback due to lower wholesale prices in the United States

## Ecuador (Contd.):

and a strengthened national currency. A good 1963 shrimp fishing season in the Gulf of Mexico oversupplied the United States market, increasing inventories 100 percent as of October 1963 over a comparable period of 1962. As a result, shrimp prices dropped sharply. The Ecuadorian sucre has strengthened since July 1963 from 21 per U. S. dollar to slightly under 19 early in November 1963. According to one producer, the net effect is that the sucre return as of November 1, 1963, was 25-36 percent lower than in July 1963.

Most likely to be injured by lower export shrimp prices is the small producer unable to sell to local processors. The crisis was expected to last at least 2 or 3 more months. (United States Embassy, Quito, November 1, 1963.)



## Egypt

PLANS FOR FOOD-PROCESSING PLANTS INCLUDE FISHERY PRODUCTS:

The Cairo press reports that a plan had been drawn up by the Chairman of the General Egyptian Organization for Foodstuffs Industries to build 23 food-processing plants throughout Egypt, including three frozen shrimp-processing plants, and a tuna and sardine cannery. The aim is to increase exports of processed foods to other Arab and African countries. (United States Embassy, Cairo, November 16, 1963.)



## French Guiana

UNITED STATES SHRIMP FIRMS CONTINUE TO EXPAND:

The two United States fishing companies established in French Guiana have increased their fleets and their catch. One of the firms located at St. Laurent plans a substantial enlargement of its shore facilities. Between them, the two companies now have about 55 vessels fishing for them with a total monthly catch of about 175,000 pounds. (United States Consulate, Martinique, November 2, 1963.)



## Ghana

CONTRACT WITH SOVIET UNION SIGNED FOR BUILDING FISH-PROCESSING PLANTS:

A complex of fish-processing plants is to be built in Tema, Ghana, with Soviet assistance, under terms of a contract signed by the two countries on October 25, 1963. The new development is expected to have an annual capacity of about 12,500 metric tons of canned, frozen, and smoked fishery products. The Ghanaian Minister of Agriculture stated that the project would enable Ghana to reduce fishery imports and save £5 million (US\$14 million) per year in foreign exchange. (United States Embassy, Accra, November 2, 1963.)

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DOMESTIC AND FOREIGN DEEP-SEA TRAWLERS FISHING OUT OF GHANAIAN PORTS:

In response to a question in the Ghanaian National Assembly regarding the number and ownership of deep-sea fishing trawlers operating in Ghanaian waters, the Deputy Minister provided the following answer: "There are 4 Ghanaian-owned fishing ships and 17 foreign vessels operating in Ghanaian waters. The 4 Ghanaian-owned trawlers are based at Tema; 2 of these, Odaw and Kakum belong to the Ghana Fishing Corporation, the state organization. The other two are owned by private organizations--Ocefish by the Oce-fish Fisheries Limited, and Pioneer by the Mankoadze Fisheries Limited.

"The Ghana Fishing Corporation, Mankoadze Fisheries Limited, and Oce-Fisheries Limited also operate contracts held with certain foreign agencies for the supply of fish as follows:

"(a) The Ghana Fishing Corporation receives catches from 8 Russian vessels, 2 Japanese, and 2 Polish vessels.

"(b) The Mankoadze Fisheries Limited receives fish from 2 Russian vessels.

"(c) The Oce-Fisheries Limited receives fish from 3 Japanese vessels." (United States Embassy, Accra, November 17, 1963.)





## Greece

NEW PURSE SEINE-TYPE NET  
HAULER DEVELOPED:

A Greek engineering company has developed a mechanically-driven net roller for purse seines, ring nets, and other surrounding nets.

The net hauler is made in two types. Type 710 for smaller vessels has a flange diameter of 3 feet 4 inches and when mounted on the deck has a height of about 8 feet. The groove of the roller is rubber-coated. Type 800-E is somewhat larger all around, and is intended for larger purse seiners, requiring a 6.3 hp. electric drive. The smaller roller turns at 18 r.p.m. and the larger at 21 r.p.m., the smaller being mechanically-driven from the main engine via a clutch.

The net hauler operates in the same way as a hanging roller or power block, but in this case, the net can be laid in the groove of the roller, and does not have to be threaded. On Type 800-E, this groove is rubber-lined and has serrations for extra gripping power.

The device has already been fitted to Greek fishing vessels and the manufacturers are offering an instructional service in its use. They claim that vessels using this type net hauler have been able to reduce their crews from 24 men to 11 men with greater safety and economy of time and effort. (*World Fishing*, November 1963.)



## Guatemala

GUATEMALAN-JAPANESE SHRIMP  
FISHING VENTURE TRENDS,  
NOVEMBER 1963:

Reports from the joint Japanese-Guatemalan shrimp enterprise at Guatemala's Pacific Coast port of Champerico indicate that the joint company is operating thirteen 60-ton and seven 70-ton shrimp vessels. The vessels fish in an area about an hour's run from port. They are said to be averaging about 13 days per trip, usually bringing in about 2 tons of shrimp on each trip. The highest shrimp catch ever made on one single tow by a vessel is 330 pounds. Even when fishing is slow, the catch-per-tow is said to exceed 40 pounds. (*Suisan Tsushin*, November 20, 1963.)



## Hong Kong

FOREIGN TRADE IN  
FISHERY PRODUCTS, 1961 AND 1962:

Hong Kong's foreign trade in fish and fishery products amounted to about US\$19.5 million during 1962. During this period, imports increased by 10.2 percent and exports (excluding reexports) by 90.1 percent over 1961. Communist China was the largest single provider of fish and fishery products imported into the Colony during that year, supplying 44.5 percent of total imports. Japan ranked second, supplying 17.0 percent, while Macao and the United States ranked third and fourth, providing 11.3 percent and 6.4 percent, respectively, of total imports.

Hong Kong exported US\$4 million worth of fish and fishery products during 1962. The United States was the best customer, buying 36.8 percent of the Colony's total exports. Japan ranked second, taking 21.2 percent, while Malaya and the United Kingdom were 3rd and 4th, at 8.9 percent and 8.3 percent.

Hong Kong's fish imports from the United States during 1962 increased 31.5 percent over the \$941,902 imported during the previous year while exports increased 146.4 percent over the \$597,370 exported during 1961. Reexports also showed a 6.6 percent increase over the \$24,609 figure for 1961. This increase in exports is probably due in part to the August 1961 rescission of the 1959 United States Foreign Assets Control regulation banning the importation of Hong Kong frozen shrimp into the United States. (This ban was imposed when it became known that Chinese Communist origin shrimp were being included in those exported to the United States; the Hong Kong Government subsequently undertook inspection and regulatory measures satisfactory to the United States.) The \$606,487 worth of frozen shrimp sold to the United States during 1962, the first full year following the lifting of the prohibition, illustrates the importance of this product to the Colony's fishing industry.

Other types of fish and marine products also showed an increase in sales to the United States during 1962. The following table lists a few which have registered sharp increases over 1961 figures.

Hong Kong Exports of Selected Fishery Products to the United States, 1962			
Product	1962	1961	Increase
	....(US\$)....		Percent
Red snapper, frozen . . . .	16,845	10,551	58.8
Shark fins, salt-dried or smoked . . . . .	71,380	27,312	159.9
Shrimp, frozen . . . . .	606,487	8,839	6,723.0
Oysters, salt-dried or smoked . . . . .	159,159	96,086	64.7
Fish fry and aquarium fish .	80,913	16,327	339.0
Fresh water fish, canned . .	142,187	56,912	148.4

The bulk of increased fish imports from the United States during 1962 was in the form of abalone. During that year, the Colony imported \$1,209,769 worth of abalone, a 69 percent increase over the amount imported in 1961. The biggest increase in the importation of this product was in the preserved but not canned category, which increased 146 times over the \$408 worth imported in 1961. While salt-dried or smoked abalone was not imported into Hong Kong from the United States in 1961, \$756.52 worth of this category was exported into the Colony in 1962. Imports of canned United States abalone during 1962 also increased by 37.7 percent over the \$829,251.83 imported in 1961. Most of the abalone imported into Hong Kong is Mexican-caught and canned and relabeled in California for reshipment to the Colony. Still not all of the imported abalone is consumed in Hong Kong as a good portion of it is reexported to overseas Chinese communities in Southeast Asia. At present South Africa is the biggest competitor in Hong Kong

## Hong Kong (Contd.):

to United States canned abalone. (United States Consulate, Hong Kong, November 19, 1963.)



## Iceland

## FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-MAY 1963:

Species	January-May	
	1963	1962
	(Metric Tons)	
Cod	176,938	176,572
Haddock	23,468	18,059
Saithe	5,273	6,951
Ling	3,676	5,081
Wolfish (catfish)	9,637	9,621
Cusk	4,517	3,907
Ocean perch	11,875	2,811
Halibut	406	569
Herring	96,050	84,129
Shrimp	349	349
Capelin	1,077	-
Other	1,753	1,906
Total	335,019	309,955

Note: Except for herring which are landed round, all fish are drawn weight.

\* \* \* \* \*

## UTILIZATION OF FISHERY LANDINGS, JANUARY-MAY 1963:

How Utilized	January-May	
	1963	1962
	(Metric Tons)	
<b>Herring 1/ for:</b>		
Oil and meal	65,570	57,924
Freezing	17,388	13,586
Salting	7,475	4,832
Fresh on ice	5,617	7,718
Canning	-	69
<b>Groundfish 2/ for:</b>		
Fresh on ice	16,929	15,229
Freezing and filleting	97,271	92,175
Salting	59,025	74,504
Stockfish (dried unsalted)	56,903	36,910
Canning	35	-
Home consumption	6,080	5,394
Oil and meal	1,227	1,143
<b>Capelin for:</b>		
Freezing	188	-
Oil and meal	889	-
<b>Shrimp for:</b>		
Freezing	267	263
Canning	82	86
<b>Lobsters for:</b>		
Fresh on ice	2	122
Freezing	71	-
Total production	335,019	309,955

1/Whole fish.  
2/Drawn fish.



## India

FISHERIES EXPANSION  
AIDED BY COOLEY LOAN:

A Cooley loan (funds derived from sale of surplus United States Agricultural commodities) of Rs.2,365,000 (US\$496,650) has been approved to a Ernakulam (State of Kerala) fisheries company, which has collaborated with a New York City fishery products marketing firm for expansion and improvement of shrimp, spiny lobster tails, processing facilities, and for seafood canning and freezing.

The expansion projects include plant and equipment for increased processing and freezing, canning facilities, trawler fleet, workshop and shipyard at Cochin, and trawlers, packaging, freezing, and storage plants at Bombay. Additional production from this project is estimated at 3.7 million pounds of different varieties of shrimp (including export of 1.6 million pounds of shrimp, 100,000 pounds of spiny lobster tails, and 160,000 pounds of frog legs), and about 2,000 tons of fresh fish annually. (United States Embassy, New Delhi, November 1, 1963.)

\* \* \* \* \*

FISHERY LANDINGS IN 1962,  
AND FOREIGN TRADE, 1962/63:

Landings of fish and shellfish by India's fishing industry in calendar year 1962 totaled 973,859 metric tons compared with 960,969 metric tons in 1961. Although there was a decline in the 1962 marine fish landings, there was an increase in inland fish catches. The decrease in marine fish catches was due primarily to the shortage of oil sardines and mackerel on the west coast of India. Kerala was the most important fish-producing state in India in 1962, accounting for about 30 percent of the total marine fish landings.

Government efforts to develop India's fishery resources, improve the socio-economic status of the fishermen, and promote exports continued during 1962. The program for the mechanization of fishing craft continued but at a lower rate than planned because of the shortage of foreign exchange.

Exports of Indian fish and fishery products in fiscal year 1962/63 (April 1-March 31) were valued at US\$8.57 million, an increase of about 4.5 percent over 1961/62. The United States was the largest single importer of Indi-

## India (Contd.):

an fishery products and accounted for about 50 percent of the total value of India's fish exports. Frozen and canned shrimp exports in fiscal year 1962/63 were valued at \$6.74 million or about 75 percent of the total value of all fishery exports.

Imports of fish into India in fiscal year 1962/63 amounted to \$12.93 million, an increase of about 60 percent over the past year. Almost the entire quantity was imported from Pakistan. (United States Embassy, New Delhi, November 1, 1963.)



## Iran

STATUS OF FISHING INDUSTRY, 1963:

A Government agency, the Iranian National Fisheries Company (Shilat), is the only commercial fishing company known to be operating in Iran. The Shilat concentrates on catching and processing the famous caviar-bearing sturgeon of the Caspian Sea. The Southern Fisheries Corporation, which was formed in early 1963 to aid economic development in the south of Iran and to supply the country with fish, was reported to have suspended operations at least temporarily in the latter part of 1963. At present, Iran does not maintain any important commercial fishery in the Persian Gulf. The annual catch by private Iranian fishermen operating in the Gulf is estimated at about 5,000 metric tons, part of which is sold to the cannery at Bandar Abbas. The Gulf landings are also used for animal food. A shrimp operation in the Gulf is being carried out by a Kuwait concern under a license obtained from the Shilat on September 24, 1962. The first year's catch of the Kuwait firm was estimated at 1,000 tons of shrimp, nearly all of which was exported to the United States. A Pakistan firm is also reported to be operating in the Gulf under an agreement with the Shilat.

The Shilat is intended to play a significant role in the Caspian fishing industry. The Company has the authority to regulate the size of the nets used by all Iranian fishermen and to enforce fishing seasons. All private fishermen must obtain operating licenses from the Shilat. The company is responsible for marketing all fish caught in the Caspian Sea.

In the fiscal year beginning August 1962, Iran produced about 210 tons of caviar and 1,700 tons of sturgeon meat. During that period, the Caspian Sea fishery also yielded about 700 tons of other fish species, most of which were marketed in Tehran. Fish is little known to the vast majority of the Iranian population. With the exception of the cannery at Bandar Abbas, the Shilat's facilities are concentrated in the northern section of Iran and consist of fishing stations along the Caspian Sea and a cold-storage warehouse and plant for smoking and salting fish at Bandar Pahlavi. The company has been reported to own 15 mechanized vessels and four 5-ton refrigerated trucks.

The annual capacity of the cannery at Bandar Abbas has been estimated at 5 million 5-ounce cans of tuna, sardines, or herring, but it is said to be producing only about 400,000 cans a year. The cannery has been described as modern in every respect, and an Iranian newspaper reported on August 8, 1963, that the cannery had contracted to supply a foreign company with one million cans of sardines.

The potential of the Iranian fishing industry, particularly in the south, seems considerable. Fish could become important not only as a consumer item in Iran, but as an export product. The Irano-Soviet Agreement for Economic and Technical Cooperation, signed in mid-1963, may stimulate the Iranian fishing industry. The Agreement is reported to contain the following fisheries projects: (1) construction of a sturgeon hatchery with an annual capacity of 3.5 million young fish; (2) a Soviet study of fish resources in the Caspian Sea; and (3) the stocking of the Caspian with 10,000 fish of the white Amur species from the Amur River in East Asia. The sturgeon-breeding plant is intended to replace the loss of natural spawning grounds with the construction of the Sefid Rud Dam in northern Iran. The white Amur fish are expected to eat the weed growing in the Bandar Pahlavi marshes which consumes the water's oxygen. The Amur fish are also expected to increase the supply of edible fish in the Caspian Sea. In addition, the Soviet Union is reported to have agreed to train an unspecified number of Iranians in fishery technology at Soviet schools and processing plants. (United States Embassy, Tehran, November 5, 1963.)

Note: See Commercial Fisheries Review, Oct. 1963 p. 52, July 1963 p. 79, June 1963 p. 73, September 1962 p. 80.



## Jamaica

### MARKET FOR CANNED SARDINES:

In Jamaica, canned sardines are very popular consumer items stocked by almost every grocery and supermarket on the island. Canned sardines entering Jamaica are dutiable at 5 percent ad valorem from preferential (British Commonwealth) sources and 15 percent from other sources, but they are not subject to exchange restrictions or other limitations. In 1962, Jamaica imported 6,417,304 pounds of canned sardines with a c.i.f. value of £623,415 (US\$1,745,562). Canada was the leading supplier of canned sardines in oil, followed by Venezuela and the United States. Canada was also the leading supplier of canned sardines not in oil, followed by the United Kingdom and the Netherlands.

Import prices and wholesale prices in Jamaica for popular packs of imported sardines are given below:

Case Size and Type	Wholesale Price		C.I.F. Price	
	US\$/Case	C\$/Cs.	US\$/Cs.	
100/3-1/4-oz. (flats), without key, packed in vegetable oil . . . . .	7.56	7.25	6.71	
48/7-oz. (oval cans), without key, packed in tomato sauce . . . . .	6.72	6.10	5.65	
24/13-oz. (oval cans), without key, packed in tomato sauce . . . . .	4.76	4.35	4.03	

Commercial circles have stated that, as regards canned sardines in oil, consumers show a preference for Canadian 3-1/4-oz. cans packed in vegetable oil, which has a low retail price of 9 cents per can. The same 3-1/4-oz. cans of sardines packed in other types of oil retail for almost 45 percent more than those packed in vegetable oil. (United States Embassy, Kingston, November 7, 1963.)



## Japan

### EXPORTS OF CANNED TUNA IN OIL, APRIL-SEPTEMBER 1962 AND 1963:

Data compiled by the Japan Canned Tuna Producers Association indicate that canned tuna in oil approved for export by that Association for the period April-September 1963 totaled 1,041,904 actual cases, as compared

Country of Destination	April-September	
	1963	1962
	. . . . (Actual Cases) . . . .	
West Germany . . . . .	321,150	162,856
Canada . . . . .	157,643	135,554
Great Britain . . . . .	100,571	28,850
Switzerland . . . . .	61,680	38,305
Belgium . . . . .	59,133	42,092
Netherlands . . . . .	57,205	40,113
Lebanon . . . . .	50,237	15,664
Aden . . . . .	43,043	11,764
Saudi Arabia . . . . .	31,959	13,074
Okinawa . . . . .	27,923	7,287
Other . . . . .	131,360	59,372

Table 2 - Japanese Canned Tuna in Oil Exports by Species, April-September 1962 and 1963

Species	April-September	
	1963	1962
	. . . . (Actual Cases) . . . .	
Big-eyed . . . . .	368,671	138,627
Skipjack . . . . .	306,826	170,451
Albacore . . . . .	197,760	154,378
Yellowfin . . . . .	47,536	9,826
Flake, etc. . . . .	121,111	81,649
Total . . . . .	1,041,904	554,931

to 554,931 cases for the same 6-month period in 1962. (Suisan Keizai Shimbun, November 19, 1963.)

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### EXPORT QUOTA FOR CANNED TUNA IN BRINE TO UNITED STATES:

The Japan Canned Foods Exporters Association, at a meeting held on November 4, 1963, announced the establishment of an export quota of 2.5 million cases of canned tuna in brine for export to the United States for the business year beginning December 1, 1963, and ending November 30, 1964. This represents an increase of 200,000 cases over the export quota for the previous business year. As in the past, the new quota will be allocated to Japanese exporters on the basis of their past performance records. (Suisan-cho Nippo, November 15, 1963.)

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### FROZEN TUNA EXPORT PRICES STRENGTHEN:

Data compiled by the Japan Frozen Tuna Sales Company indicate that f.o.b. export prices for frozen tuna and tuna loins contracted for shipment to the United States from Japan proper have recovered remarkably since July 1963, when prices were at their lowest level. In October, albacore (frozen, round) prices averaged US\$347 per short ton, compared to \$285 in July, while yellowfin (gilled & gutted, 20-100 lbs.) averaged \$309 per short ton, as compared to an average of \$250 in July. (Suisan Taushin, November 6 & 7, 1963.)

Table 1 - Average Export Prices for Frozen Tuna Shipped to United States Direct from Japan, April-October 1963, with Comparisons

Month	Albacore 1/		Yellowfin 2/	
	1963	1962	1963	1962
	(US\$ F.O.B. Per Short Ton)			
April . . . . .	399	365	337	348
May . . . . .	380	379	325	346
June . . . . .	3/	384	252	359
July . . . . .	285	379	250	347
August . . . . .	305	372	262	340
September . . . . .	306	374	279	327
October . . . . .	347	358	309	308
1/Round.				
2/Gilled & gutted, 20-100 lbs.				
3/No albacore contracted for export.				



## Japan (Contd.):

Table 2 - Average Prices for Tuna Loins Shipped to United States Direct from Japan, April -October 1963, with Comparisons				
Month	Albacore		Yellowfin	
	1963	1962	1963	1962
(US\$ F.O.B. Per Short Ton)				
April .....	837	815	726	730
May .....	781	819	731	741
June .....	763	-	678	746
July .....	683	833	612	738
August .....	725	800	629	730
September .....	792	-	673	707
October .....	775	730	677	661

\* \* \* \* \*

## FROZEN TUNA EXPORT

## MARKET TRENDS, NOVEMBER 1963:

Japanese press reports in early November 1963 indicated that albacore exports to the United States continued to be very slow, and that very few sales had been concluded with United States packers. The United States poor demand for Japanese albacore was attributed primarily to the very good albacore catches by United States fishermen.

The price of Japanese frozen albacore for export to the United States in early November was reported to be about US\$390-400 per short ton (c. & f.). Albacore ex-vessel prices in Japan were quoted at a high of around 140 yen per kilogram (\$353 per short ton). Since Japanese tuna packers were expected to switch to tangerine canning, indications were that the November export price level of \$400 might decline in the following 2 or 3 months.

Yellowfin tuna were being exported to the United States in limited quantities at c. & f. prices of \$360-370 per short ton. The United States packers were said to be offering to buy Japanese yellowfin tuna because of poor yellowfin landings in the United States and also because they expected a recovery of canned light meat tuna sales in the domestic market.

The price of yellowfin tuna for export to European countries was reported to be advancing. In Italy, where buying was said to be very active, yellowfin (gilled & gutted) were reported being sold at a record high c.i.f. price of \$410 per metric ton.

The high price offered for yellowfin tuna was attributed to inadequate supply. Yellowfin are said to comprise only 20-30 percent of the total Japanese Atlantic tuna landings.

Bluefin, followed by big-eyed, are the principal species being landed by the Japanese long-line vessels but those two species are not popular in Italy. Italy continues to refuse to accept pure shipments of big-eyed. For mixed deliveries of yellowfin and big-eyed, Italy offered a c.i.f. price of \$340 per metric ton, provided shipments did not contain more than 40 percent big-eyed. Czechoslovakia, a steady buyer of big-eyed, was said to be offering c.i.f. prices of \$325-330 per metric ton, and was reported to be likely to continue importing that species of tuna. (Suisancho Nippo, November 11; Suisan Keizai Shimbun, November 10, 1963.)

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FISHERY FIRM APPLIES TO OPERATE  
TUNA MOTHERSHIP IN ATLANTIC OCEAN:

One of the largest Japanese fishing companies is reported to have submitted a petition to the Japanese Fisheries Agency requesting that the Government authorize mothership-type tuna vessel operations in the Atlantic Ocean. The Agency planned to announce its decision regarding this request after the Central Fisheries Coordination Council meeting in December 1963, at which time licensing requirements for tuna mothership-type operations were expected to be discussed. (Shin Suisan Shimbun Sokuho, November 8, 1963.)

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SHORE FACILITIES IMPROVED AT  
MALAYSIAN TUNA FISHING BASE:

A Japanese overseas fishing company and the Japan Federation of Tuna Fishermen's Cooperative Associations (NIKKATSUREN), which are involved in the operation of the Japanese tuna base at Penang, Malaysia, have been making concerted efforts since in early 1963 to improve shore facilities and to attract tuna vessels (ice boats) to fish out of their base. The overseas fishing company has enlarged the existing inadequate cold-storage facilities, and the expanded facilities now include a 1,200-ton capacity cold-storage plant and a 40-ton quick-freezing plant. The company has also established an advance base at Port Luis, Mauritius Island, east of Madagascar, near the principal albacore fishing grounds in the western Indian Ocean. Now catches made in the western Indian Ocean can be unloaded at that port for transshipment to Penang.

## Japan (Contd.):

NIKKATSUREN, which financially supported the cold-storage expansion project at Penang, is launching a nationwide drive to solicit Association members to participate in the Penang fishing operation. The Federation has also made arrangements with the Agriculture and Forestry Central Bank (Government-operated) for advancement of loans to cover predeparture expenses and refrigeration equipment installation expenses for participating vessels. (Suisan Keizai Shimbun, October 27; Suisan Shuho, October 15, 1963.)

The Penang base has a 6,000-ton fresh tuna quota and a 4,000-ton frozen tuna quota. Although the base originally started operations in 1960 as a joint (Japanese-Malaysian) canning enterprise, it has, in the last year or so, begun concentrating its effort on promoting and expanding frozen tuna transshipments to the United States. Heretofore, the base has not been able to fulfill its fresh tuna quota due to its failure to attract sufficient ice boats. Ice-boat operators were reluctant to fish out of Penang due to the lack of adequate shore cold-storage facilities at that port and its great distance from the better fishing grounds in the western Indian Ocean. The concerted effort made to improve receiving and holding facilities for fresh fish is intended to overcome apathy of ice-boat operators to fish out of their base.

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#### TUNA VESSELS BASED AT AMERICAN SAMOA IN DIFFICULTY:

Virtually all Japanese tuna vessels (ice boats) based at American Samoa are reported to be operating at a loss due to a drastic decline in catch rate in nearby waters since early 1963. It was reported that many of those vessels are terminating their operations out of Samoa and are returning to Japan. Consequently, Japanese tuna deliveries to Samoa were expected to fall far short of the Japanese export quota established for that island, and it was reported that the tuna supply shortage already appeared to be threatening United States Samoan canning operations.

Overseas-based Japanese ice boat operators are said to be restudying their operations in an effort to seek a solution to the critical problem confronting them. They are said to be seeking Government authorization

to equip their vessels with freezing equipment, as well as planning to transfer their fishing operations to the Indian Ocean or the Caribbean Sea. (Suisan Tsushin, October 31, 1963.)

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#### TUNA FEDERATION HOPES TO CONTINUE REFUELING VESSELS AT SEA:

The Japan Federation of Tuna Fishermen's Cooperative Associations (NIKKATSUREN) is reported to favor the continuance of the program it instituted on an experimental basis in October 1963 of refueling tuna vessels at sea. To eliminate loss of fishing time to its member vessels, the Federation had chartered the 1,500-ton tanker Shimmei Maru to refuel vessels in the central and eastern Pacific Ocean.

The experiment has been criticized by the fishermen's unions, which claim that the extension of fishing trips creates undue hardships on crew members. The Japanese Ministry of Transportation is studying this matter and is said not to be in favor of the continuance of refueling vessels at sea unless other provisions, like food and fresh water, can be furnished at the same time. (Suisan Tsushin, November 20, 1963, and other sources.)

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#### VIEWS ON PROPOSALS ADVANCED AT FAO-SPONSORED MEETING ON CONSERVATION OF ATLANTIC OCEAN TUNA:

The following editorial on the Food and Agriculture Organization (FAO) sponsored meeting on Atlantic tuna conservation (held at Rome, October 25-30, 1963) appeared in the Japanese fisheries periodical Suisan Keizai Shimbun, dated November 22, 1963.

The translation of the editorial follows:

"A working party organized by the Food and Agriculture Organization to develop conservation measures for the Atlantic Ocean tuna resources recently held its first meeting in Rome. At that meeting, the United States delegation is reported to have strongly criticized Japan's increasing fishing intensity in the Atlantic Ocean and stressed the need for establishing a regulatory agency, similar to the Inter-American Tropical Tuna Commission, to regulate the Atlantic Ocean tuna fishery. To this, the Japanese delega-

## Japan (Contd.):

tion is said to have argued that all concerned countries should, first of all, carry out a thorough investigation of resources on a co-operative basis. Apparently, the meeting adjourned without agreement being reached.

"With regard to the regulatory agency, the United States delegation proposed that the expenses for the operation of the agency be shared by member countries in proportion to the quantity of tuna landed by each country. It is understood that a total of US\$1 million would be needed to operate that organization. The annual tuna harvest in the Atlantic Ocean amounts to approximately 150,000 tons, of which Japan accounts for 80,000 tons, France 40,000 tons, and Spain and Portugal 10,000-15,000 tons each. If the expenses were to be shared solely on the basis of catch, Japan's share would exceed \$500,000, which would be financially difficult for her to meet.

"Perhaps the Atlantic Ocean tuna resources will eventually be placed under international management, although, at the present time, the status of those resources is still not well known and tuna catch reports available from the fishing countries are inadequate.

"The United States, in advocating the need for a regulatory agency, claimed that the annual Atlantic Ocean tuna production had increased to about 200,000 tons and attributed the increase to the intensification of Japanese longline fishing effort, adding that the decline in yellowfin tuna has led Japan to pursue albacore and big-eyed tuna. Moreover, the United States asserted that yellowfin and big-eyed tuna taken in the Atlantic Ocean belong to a common stock, which the coastal nations also fish, and intimated that the present intensity of Japanese fishing effort would wipe out the tuna resources in the Atlantic. However, the United States arguments, based solely on her data related to fishery trends, would be meaningless or merely academic unless other countries similarly submit catch statistics compiled under standardized procedures or present data compiled through co-operative investigations.

"It may perhaps be necessary to establish an agency to regulate the tuna fishery. However, it must be preceded by cooperative investigations and compilation of catch reports by which to establish the need for reg-

ulation. That was the reason for organizing the FAO working party. In other words, that party was formed not only to consider catch restrictions but to develop conservation measures for tuna and to promote their rational utilization. At present, there are no concrete data by which to definitely establish the need for regulation.

"The United States maintains that 'unless regulatory measures are developed, the tuna resource will be destroyed.' Japan is a country dependent on fishing and cannot afford to destroy that resource. The United States assertion can only be construed to indicate a lack of respect for the Japanese fishing industry." (Suisan Keizai Shimbun, November 22, 1963.)

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# EXPORTS OF CANNED SARDINES, MACKEREL, AND SAURY, APRIL-OCTOBER 1963:

Data compiled by the Japanese joint sales company handling the sales of canned sardines, mackerel, and saury indicate that a total of 996,000 cases of canned sardines, mackerel, and saury were contracted for export

Japanese Export Sales of Canned Sardines, Mackerel, and Saury, April-October 1962 and 1963				
Country of Destination	April-October			
	1963			1962
	Sardines	Mackerel	Saury	Total
	.....(In 1,000 Cases).....			
Europe . . . .	25	11	4	40
West Africa . .	1	47	-	48
Ceylon . . . .	-	18	76	94
Burma . . . .	60	20	90	170
Malaysia . . .	2	66	12	80
Philippines . .	10	43	239	292
New Guinea . .	3	68	160	174
Other countries	22	3	16	98
Total . .	123	276	597	996

during the period April-October 1963. This is more than double the comparable 1962 exports which totaled 488,000 cases. (Suisan Tsushin, November 16, 1963.)

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# SAURY LANDINGS DOWN SHARPLY IN 1963:

The 1963 saury fishing season in Japan was reported in early November 1963 as being very poor, with landings down substantially from 1962. Saury production for the period April 1-November 10, 1963, totaled 232,713 metric tons, a decrease of 42 percent or

## Japan (Contd.):

166,728 metric tons below the landings of 399,441 tons made in a comparable period of 1962. Saury catches in the Okhotsk Sea were good, exceeding comparable 1962 landings by nearly 30 percent, but catches off eastern Hokkaido and Honshu (Japanese main island) were down 40-60 percent. Despite the decline in total production, Japanese saury fishermen were reported to have operated profitably in 1963, due to substantial increases in ex-vessel prices as compared to 1962.

Due to poor fishing conditions, Japanese canned saury production in 1963 was expected to decline to an unprecedented low--to about one-twelfth of the 1962 production. Canned saury production as of November 10, 1963, amounted to only 200,000 cases. This compares with a total pack of 2.5 million cases in 1962, 3.4 million cases in 1961, and 1.7 million cases in 1960.

Japanese exporters, following a November 20 meeting, were planning to export to Egypt only about 40,000 cases of canned saury due to the short supply. They hoped to increase saury exports to that country if additional supplies became available. (Suisan Tsushin, November 16 & 20; Minato Shimbun, November 14, 1963.)

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#### FISH EXPORTERS AFFECTED BY DUTY IMPOSED BY GHANA:

According to information received in Japan from Japanese exporting firms in Ghana, the Government of Ghana issued an ordinance on October 21, 1963, placing an import duty (where there previously was none) of six pence (6.96 U. S. cents) a pound, or about US\$139 a short ton, on fresh and frozen fishery products.

At least two Japanese firms will suffer from the effects of the ordinance. Fishery exports to Ghana of one of the Japanese firms are reported to average about 1,000 metric tons a month. Average prices paid for those exports range from \$180-230 per metric ton. On the basis of those figures, assessment of the six pence per pound import duty will raise that company's export prices by 60-77 percent.

This firm was expected to send a representative to Ghana to report on the situation. (Nihon Keizai Shimbun, October 31, 1963.)

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#### GOVERNMENT ALLOTS FUNDS FOR FISH MEAL IMPORTS:

The Japanese Ministry of International Trade and Industry (MITI) has approved a foreign fund allocation of US\$9.1 million for the purchase of 70,000 metric tons of foreign fish meal. Japanese importers planning to import fish meal must submit applications for foreign fund allocations to MITI by March 10, 1964. (Suisan Keizai Shimbun, October 29, 1963.)

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#### FROZEN SHRIMP TRADERS CONCERNED OVER HIGH INVENTORY:

Japanese shrimp importers and distributors were reported to be alarmed over possible price disruptions occurring in the Japanese domestic shrimp market due to heavy frozen shrimp inventories, estimated at over 2,000 tons at the end of October 1963. They expected to be compelled to sell at a loss their stocks of shrimp, much of which they imported at high prices, since the Japanese "Taisho" shrimp season would commence soon after the end of October, and also since new shipments of Mexican shrimp were scheduled to arrive in Japan in mid-November. In addition, there was the possibility that shrimp from Mainland China might be imported if satisfactory price agreements could be reached with that country.

Market prices for frozen shrimp in Japan toward the end of the year and in the early part of the following year are largely determined by the amount of "Taisho" shrimp production in Japan and the quantity of imports. At the end of October, 21-25 count brown shrimp were being traded in Japan for around 2,100 yen (US\$5.83) per 5-lb. carton. Mexican shrimp exporters were said to be offering (for mid-November delivery in Japan) 21-25 count brown shrimp (5-lb. carton for 1,800-1,900 yen (US\$5-5.28).

Consumption of frozen shrimp in Japan is estimated by one trading firm at 500-600 metric tons per month. (Minato Shimbun, October 30, 1963.)

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Japan (Contd.):

#### NEW FIRM PLANS TRAWLING AND FISH-MEAL OPERATIONS IN ATLANTIC:

A Japanese fishing company, which was organized in early 1963 with a paid-up capital of 15 million yen (US\$41,667), and which voted to increase its paid-up capital to 30 million yen (US\$83,333), is reported to be seeking Government authorization to operate two trawlers (one 990-ton and another 500-ton) in the Atlantic Ocean. Should approval be granted, the company plans to increase further its paid-up capital by 3 or 4 times.

The Japanese firm is also reported to be negotiating with Angolan authorities the re-establishment of a fish-meal venture off Angola. (Suisan Tsushin, November 6, 1963.)

Beginning in the winter 1961/62, another Japanese firm operated the fish-meal factoryship Renshin Maru (14,094 gross tons) for two seasons off Angola under a year-to-year arrangement whereby Angolan fishermen delivered their catch to the factoryship for processing into fish meal. However, this firm decided to terminate that arrangement in 1963 rather than enter into a permanent partnership and form a joint company in Angola, as requested by Angolan authorities.

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#### COMMERCIAL QUALITY PEARLS PRODUCED FROM FRESH-WATER MUSSELS:

A pioneer in Japan's fresh-water pearl culture industry has succeeded in raising pearls commercially in the fresh-water mussel (*Anodonta japonica*). The pioneer, who is chairman of the Lake Biwa Pearl Culture Association, carried out his experiments on the black crow mussels at Tauchiura on the large freshwater Kasumigaura Lagoon northeast of Tokyo. Starting in the spring of 1963, he has already harvested cultured pearls 5 millimeters (about  $\frac{1}{2}$  inch) in diameter and expects specimens 3 times as large in 3 years. He says that experiments with another type of shellfish found in the same lagoon are promising.

His previous work at Lake Biwa produced large quantities of coreless pearls without nuclei, although only 2 percent were marketable. Raising black crow mussel pearls is much more complex and employs use of a core or nucleus. He anticipates that about

8 percent of this pearl harvest will be marketable for jewelry. He has made arrangements for 4 million live mussels which should yield 7,260 pounds of pearls.

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#### LONG-RANGE FISHERIES MANAGEMENT PROGRAM PLANNED:

The Japanese Fisheries Agency Director at a press conference held on October 28, 1963, revealed that the Agency plans to draw up a blueprint for a broad, long-range fisheries management program covering roughly a 5-year period, beginning from 1967. The long-range program is to be prepared for public release by 1967, when all fishing vessel licenses become renewable. It will show the number and size of fishing vessels to be licensed for each of the designated fisheries, and is expected to take into full consideration the condition of fishery resources, fishing effort, technological developments, international trends, and supply and demand relationships.

According to the Director, the purpose of the program is not to define the requirements for each designated fishery but to develop from an over-all viewpoint a coordinated management program for the Japanese coastal, offshore, and distant-water fisheries, which are intimately related to each other. (Suisan Keizai Shimbun, October 29, 1963.)

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#### PRODUCTION TARGETS AND COMPOSITION OF 1963/64 ANTARCTIC WHALING FLEETS:

Seven Japanese whaling fleets were scheduled to depart Japan in early November to take part in the 1963/64 international Antarctic

Table 1 - Japanese 1963/64 Antarctic Whaling Expedition's Production Target

Whaling Fleet	Catch Quota Blue-Whale Units
<u>Nisshin Maru</u> . . . . .	766.66
<u>Nisshin Maru No. 2</u> . . . . .	766.66
<u>Nisshin Maru No. 31</u> . . . . .	111.83
Total . . . . .	1,645.10
<u>Zunan Maru</u> . . . . .	710.73
<u>Zunan Maru No. 2</u> . . . . .	710.70
Total . . . . .	1,421.43
<u>Kyokuyo Maru No. 2</u> . . . . .	766.66
<u>Kyokuyo Maru No. 3</u> . . . . .	766.66
Total . . . . .	1,533.32
Grand total . . . . .	4,599.90
1/Will fish mainly for sperm whales.	

## Japan (Contd.):

Table 2 - Composition of Japan's 1963/64 Antarctic Whaling Fleets				
Mothership	Support Vessels			
	Freezer Factoryship <sup>1/</sup>	Supply Vessels	Tankers	Catcher Vessels
Nisshin Maru . . . . .	2	4	1	12
Nisshin Maru No. 2 . . . . .	3	5	-	12
Nisshin Maru No. 32/ . . . . .	1	-	-	11
Zunan Maru . . . . .	3	4	1	12
Zunan Maru No. 2 . . . . .	2	5	1	12
Kyokuyo Maru No. 2 . . . . .	2	7	1	11
Kyokuyo Maru No. 3 . . . . .	2	5	1	12

<sup>1/</sup>Includes 5 motherships employed in the 1963 salmon fishery, 5 of the larger factoryships employed in the 1963 Bering Sea bottomfish fishery, and 5 other factoryships, some of which were employed formerly in the salmon mothership and tuna mothership fisheries.

tic whaling season which began on December 12, 1963. The production targets and the composition of the seven fleets are found in the tables. (Suisan Keizai Shimbun, September 29, 1963, and Suisan Shuho, September 15, 1963.)

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#### ANTARCTIC WHALING FLEETS LOOK FOR BETTER OIL MARKET IN 1964:

The success of Japan's 1963/64 international Antarctic whaling expeditions is expected to depend primarily upon the world market for whale oil in 1964. Of the anticipated production, Japan hopes to export 123,000 metric tons of whale oil (Editor's Note: Believed to include liver oil since total Japanese whale oil--not including liver

oil--production target amounts to 98,751 tons), valued at an estimated US\$22.9 million, based on October 1963 world market price trends. In 1963, Japan exported 95,200 tons of oil valued at over \$13 million.

Whale oil prices rose sharply in 1963 and this development has buoyed the hopes of the large Japanese whaling companies which hope to operate their fleets at a profit during the coming season, despite the reduction in the international Antarctic whale catch quota. The Japanese fleets which participated in the 17th Expedition (1962/63) are reported to have lost, on an average, from 200- to 300-million yen (US\$556,000-\$833,000) due to a drastic decline in the world price for whale oil, and also to the decline in price of whale meat.

The 1963 rise in whale oil price is attributed to the decline in production of Peruvian fish oil and of European vegetable oil. As of October, the whale oil market was described as having definitely turned into a sellers' market. Reportedly, in July 1963 Japan sold, from the production of last season's North Pacific whaling operations, 5,000 metric tons of baleen whale oil to an independent European fat- and oil-processing firm for a c.i.f. price of US\$218 per metric ton. This represents a price increase of more than 70 percent over that paid in 1962 for the North Pacific production, which brought \$126 per metric ton. The \$218 price also represents an increase of over 35 percent over the average price (\$176 per metric ton) which a large British processor paid for Japan's

Table 1 - Baleen Whale Production Target of Japan's 1963/64 Antarctic Whaling Expedition							
Fleet	Catch Quota <sup>1/</sup>	Oil	Frozen Meat	Salted Meat	Meal	Liver Oil	Extracts
	Blue-Whale Units	(Metric Tons)			(Kiloliters)		
Nisshin Maru . . . . .	761	14,471	21,438	1,164	380	7,616	30,000
Nisshin Maru No. 2 . . . . .	761	14,471	21,438	1,164	1,560	7,616	22,000
Nisshin Maru No. 32/ . . . . .	111	2,111	3,128	52	61	1,111	3,000
Zunan Maru . . . . .	706	12,708	21,180	1,151	-	6,707	-
Zunan Maru No. 2 . . . . .	706	12,708	21,180	1,151	-	6,707	-
Kyokuyo Maru No. 2 . . . . .	761	14,091	20,565	800	1,249	8,378	-
Kyokuyo Maru No. 3 . . . . .	761	14,091	19,803	692	1,447	4,570	45,700
Total . . . . .	4,567	84,651	128,732	6,174	4,697	42,705	100,700

<sup>1/</sup>Japan's catch quota is 4,600 blue-whale units.

<sup>2/</sup>Will fish primarily for sperm whale.

Table 2 - Sperm Whale Production Target of Japan's 1963/64 Antarctic Whaling Expedition						
Fleet	Catch Target	Oil	Salted Meat	Meal	Liver Oil	Extracts
	No. Whales	(Metric Tons)			(Kiloliters)	
Nisshin Maru No. 3 . . . . .	2,100	10,200	810	87	21,000	128
Zunan Maru . . . . .	200	1,200	272	-	2,100	-
Zunan Maru No. 2 . . . . .	200	1,200	272	-	2,100	-
Kyokuyo Maru No. 2 . . . . .	100	750	32	60	1,300	-
Kyokuyo Maru No. 3 . . . . .	100	750	32	120	1,300	7,000
Total . . . . .	2,700	14,100	1,418	267	27,800	7,128

## Japan (Contd.):

1962/63 Antarctic baleen whale oil production.

The large British processor is reported to be considering offering a c. i. f. price of \$196 per metric ton for Japan's baleen whale oil production. However, since there is no evidence at the present time which would indicate that prices will trend downwards in the near future, Japan is reported to be planning on holding out for a c. i. f. price offer of \$224 per metric ton.

Price of whale meat in 1964 is expected to increase to over 100,000 yen (\$278) per metric ton, as compared to an average price of 78,000 yen (\$217) per ton in 1963. (Suisan Keizai Shimbun, October 27, 1963.)

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# JAPAN-COMMUNIST CHINA FISHERIES AGREEMENT:

Japan and Communist China are reported to have signed a private fisheries agreement at Peiping on November 8, 1963, after several weeks of negotiations. The new agreement, which became effective December 23, 1963, is basically patterned after the first private agreement concluded in 1956, which Communist China abrogated in 1958 following the incident at Nagasaki, Japan, in which Japanese demonstrators defamed the Communist Chinese flag.

The new agreement, like the first, provides for the establishment of six fishing areas (numbered 1-6), where limited numbers of fishing vessels from each country would be allowed to fish during certain periods. Primary differences between the two agreements are: (1) extension of the effective period of the agreement from 1 to 2 years; (2) increase in numbers of Communist Chinese fishing vessels permitted to operate in the different fishing areas; and (3) establishment of an 11-month closed season for "sakura" sea bream in Area 4.

Basic provisions of the new agreement are reported to be:

- (1) Agreement to become effective 45 days from date of signing, and to continue in force for a period of two years.
- (2) Areas covered by the agreement are the Yellow Sea and the East China Sea north of 27° N. latitude and east of the line extending approximately 50 miles off the Chinese mainland.
- (3) Establishment of 6 fishing areas.
- (4) Establishment of 3 emergency ports of call in Japan for Communist Chinese fishing vessels in distress and 2 emergency ports of call in China for Japanese fishing vessels in distress.
- (5) Both countries to conduct resource investigations in areas covered by the agreement and to exchange data.
- (6) Japanese fishing vessels to refrain from entering restricted Chinese military zones.

(7) Both countries to settle fishery disputes and fishing violations in accordance with procedures established under agreement.

The signing of the private fisheries agreement with Communist China was heralded by the Japanese fishing industry as a great achievement. Principal and immediate benefit to the Japanese fishermen operating trawlers in the Yellow Sea and the East China Sea is the removal of the constant threat of seizure from Communist Chinese patrol vessels. Anticipation is also held for improved relations with Communist China in the future.

The Republic of Korea (ROK) is reported to be highly critical of the Japan-Communist China private fisheries agreement. The ROK claims that Japan has completely departed from the firm position she has adopted in pressing for a 12-mile exclusive fishing zone (off Korea) in her negotiation with the ROK, whereas, in substance, the Japan-Communist China agreement grants to Communist China a 50-60 mile exclusive fishing zone off the Chinese coast. Reportedly, the ROK's criticism has caused concern among Japanese fishery circles, who fear that Korea misunderstands Japan's intent, and that this development may exert an unfavorable effect upon the current Japan-ROK fisheries negotiation.

The Japanese industry is stressing the point that the agreement was concluded on the basis of equality to protect the fishery resources of the East China Sea and the Yellow Sea and to ensure the safe operation of Japanese vessels. As such, they feel that the ROK-Japan fishery negotiation should also be conducted in this atmosphere. (Minato Shimbun, November 7, 9, & 16; Suisan Keizai Shimbun, November 7, 1963.)



## Republic of Korea

### GOVERNMENT GUARANTEES PAYMENT OF THREE PRIVATE FISHERY LOANS:

In late October 1963, the Government of Korea approved payment guarantees for three more fishery loans extended to Korean firms by foreign companies. The funds made available will be used to import tuna vessels.

A guarantee approved on October 22, involves a loan of US\$1,530,342 (including interest) from a United States firm in California. According to previous reports, a Korean firm will use the loan to purchase eleven 140-ton tuna vessels from a shipyard in Shikoku, Japan.

The second guarantee covers a loan of \$1,572,750 by a West German group. The loan will finance the construction of several 135-ton tuna vessels in a West German shipyard. Work on the vessels was tentatively scheduled to begin in December 1963 and be completed in 14 months. The terms of the loan call for repayment in 5 years in semi-annual installments at 6 percent annual in-

### Republic of Korea (Contd.):

terest. It has been reported that the loan is to be repaid from "profits from the fish catch," but whether or not such a provision is spelled out in the contract is not known.

On October 28, the Korean Government approved a payment guarantee for a loan under which a United States company in New York is to have eight 135-ton and two 290-ton tuna fishing vessels constructed by a Japanese builder for a Korean firm. The loan is for \$1,540,000 plus \$438,900 in interest charges. Terms call for semi-annual payments over 7 years, after a 1-year deferment, at an interest rate of 6 percent. Provision was made for payments to be made from profits from the tuna catch. The new vessels are to operate in the Indian Ocean after delivery which is expected by September 1964. (United States Embassy, Seoul, November 1, 1963.)

Note: See *Commercial Fisheries Review*, December 1963 p. 71, October 1963 p. 60.

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### NEW FISH MARKET CENTER AT PUSAN DEDICATED:

The United States Agency for International Development (AID) financed Pusan Fish Market Center was formally dedicated on November 1, 1963. This modern facility, which was completed following a number of obstacles since the United States and Republic of Korea project agreement was signed in March 1957 and construction began in July 1961, promises to be an important factor in increasing production of exportable fisheries products and in supplying higher quality products for domestic consumption. The market can handle 865 tons of fish a day. Forty tons of ice can be produced each day and the ice storage capacity totals 650 tons. The daily freezing capacity for fish is 22 tons and 800 tons of fish can be kept in cold storage.

More than \$184 million (US\$1,415,000) has been invested in the Center. Of this amount nearly \$70 million (US\$538,000) were provided directly by the United States in dollars and counterpart funds and additional support from United States sources was provided indirectly in the form of fishery fund loans and technical assistance.

Pusan is the most important single home port and market for the 850,000 Koreans

whose income is derived partly or wholly from fisheries and has a large share of the total of 34,000 fishing vessels that operate out of Korean ports. The industry is landing marine products valued at about \$5.5 billion (about \$42.3 million) annually and provides about 15-20 percent of all of Korea's foreign exchange earnings. (United States Embassy, Seoul, November 5 and 15, 1963.)



### Liberia

#### FREEZING BROADENS MARKET FOR FISH:

The production of 2 million pounds of marine fish in Liberia during the months of July and August of 1963 equalled the total for 1962. Estimates by a Monrovia fishing company are that if the demand pattern continued at this level, about 12 million pounds could be marketed annually provided the landings could be maintained at the July-August rate.

The increased production resulted from the demand created by freezing, packaging, and lower prices. The improvement in processing and in marketing was brought about by the new management of a Monrovia fishing company. The company has contracted the services of Japanese trawlers which trawl off the West African shore.

The catch is packaged in 44-pound cardboard cartons and frozen at sea. Delivered in this condition to the cold-storage facilities in Monrovia, the fish is wholesaled in the frozen packages to buyers, mostly market women, for US\$6 to \$7 per 44-pound box, who distribute them by taxicab, principally. Inland country distribution has increased tremendously. A market woman will take as much as 10 cartons of fish 150 to 200 miles into the interior. The package will remain frozen 15 to 20 hours. The fish, mostly red snappers, are sold immediately. The Monrovia fishing company also operates two insulated trucks for the distribution of frozen fish to inland areas.

Previously, fish caught by the Monrovia fishing company's trawlers (Spanish) was delivered unfrozen in wooden boxes of 22 pounds each to the cold storage in Monrovia where they were chilled, and sold at \$6 to \$7 per box, or double the new price. In this condition and at those prices, little of the fish left the Monrovia area. The decrease in the



**Liberia (Contd.):**

wholesale price of fish permits retailing at 25 to 30 U. S. cents a pound.

On the basis of the October 1963 wholesale price of 14.8 U. S. cents average, the projected annual value of the fish production would amount to \$1,776,000, with a retail value of about \$3,300,000.

It is expected that this increase in fish consumption in Liberia could reduce imports of protein foods which are retailed at an equivalent price range. Corned beef, pigs feet, and some canned and dried fish are the principal items in this category. This would mean a savings in foreign exchange payments of approximately \$1 million a year.

The main problem confronting the Monrovia fishing and distributing firm is one of supply. The trawlers have not demonstrated a continuous capability of supplying the July-August level of fish catches to Liberia. It is understood that the company has a contract with 4 Japanese trawlers which also supply Ghana and Nigeria. Soviet trawlers also operate in the West African waters, but as far as is known none of the fish caught by the Soviet trawlers reach Liberia.

Another problem is inadequate cold storage capacity in Liberia which will probably be overcome soon. Increased storage capacity will enable Liberia to receive greater quantities at any single delivery. The management of the Monrovia company is expanding and constructing additional facilities in the city, and has plans for inland facilities at Buchanan. (United States AID Mission to Liberia, October 28, 1963.)

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**NEW FISHING COMPANY EXPECTED TO INCREASE LANDINGS AND CONSUMPTION:**

The newly formed Liberian fishing corporation has announced the availability of 2,600 shares of common stock at US\$200 per share. Of these, 1,326 shares, or 51 percent, were to be sold to Liberian citizens and other Liberian institutions while 1,274 shares, or 49 percent, could be sold to foreign citizens and institutions.

The purpose of the company is to: (1) supplement the inadequate supply of fresh

fish, (2) stabilize the retail price structure, (3) extend the benefits of the venture to as many Liberians as possible, and (4) provide a reasonable profit to shareholders.

Production figures through August 1963 indicated there would be a significant increase in the domestic catch and consumption of fish during 1963. This will result in part from the improved freezing facilities of a Monrovia fishing corporation and better methods of distribution throughout the country. (United States Embassy, Monrovia, November 30, 1963.)

**Mexico****CAMPECHE SHRIMP VESSEL OWNERS SUFFER FROM LOWER PRICES:**

During October 1963, Mexico's Gulf Coast shrimp industry in the State of Campeche suffered an economic setback caused by a sharp drop in the world price for shrimp. The Campeche newspapers reported that shrimp catches by United States vessels were the largest in recent years and have flooded the United States market. As a result, the price of top quality large shrimp has dropped from US\$0.87 to US\$0.59 a pound. The newspapers further commented that this low price combined with the poor catches by the Mexican Gulf Coast fleet has panicked owners of the shrimp vessels.

An official of a Campeche shrimp-packing firm and an official of an agency representing the American Shrimp Association stated that the industry has always been marked by cyclical depressions every 4 or 5 years and that such crises must be expected. Furthermore, they explained that this is the season when the catches are normally poor in Campeche waters and, unfortunately, it is combined this year with exceptionally good catches by the United States Gulf Coast fleet. They admitted the shrimp prices were low and temporary measures were necessary to lower the costs of the Mexican shrimp vessel owners which have risen steadily in recent years. They believed that the basic problem was the lack of a market other than that of the United States which forced the Mexican industry to fluctuate with the United States market. They said the crisis will last about three months.

In conflict with these opinions was the demonstration on October 25, 1963, of a large

## Mexico (Contd.):

fleet of United States shrimp vessels in international waters in front of the port of Campeche. The United States shrimp fishermen apparently believed that the price of shrimp had been artificially lowered and that their action would force the price to rise. The newspapers mentioned that the Mexican shrimp fishermen in Campeche supported the demonstration of the United States fishermen.

The Campeche shrimp-fishing industry provides a livelihood for 14 percent of the State and the Governor of Campeche has moved rapidly to ease the plight of the vessel owners. Apparently because of the Governor's intervention, the cost of many of the products used by the industry and other expenses have been reduced. The price of ice was lowered from US\$6.40 per ton to \$4.80, engine fuel was cut by 0.8 U. S. cents a liter, the handling costs at the pier were reduced 50 percent, and the taxes charged by the State on the catches also were reduced. (United States Consulate, Merida, November 5, 1963.)

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## CUBAN FISHING VESSELS INSPECTED FOR HOOF AND MOUTH DISEASE:

All Cuban fishing vessels arriving in Mexican ports in the Yucatan area during the latter months of 1963 were subject to inspection and disinfection by Mexican Sanitary authorities in order to prevent the spread of hoof and mouth disease said to be prevalent in Cuba. These restrictions were applied to all Cuban vessels, both those friendly to the Cuban regime and those coming from Cuba carrying refugees. The inspection was being applied to Mexican vessels which pick up on the high seas and bring to port Cuban refugees. (United States Consulate, Merida, November 1, 1963.)

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## FISH MEAL IMPORTS UP SHARPLY, JANUARY-SEPTEMBER 1963:

Mexico's imports of fish meal amounted to 21,006 metric tons during the first nine months of 1963. Only 13,545 tons were imported in the same period of 1962. (United States Embassy, Mexico City, November 9, 1963.)



## Morocco

## FISHERIES TRENDS, THIRD QUARTER 1963:

Optimistic reports marked Moroccan fishing operations during the third quarter of 1963 which is normally the height of the fishing season. The sardine catch was running at about twice the usual amount, with the ports of Safi and El Jadida experiencing record one-day landings (1,600 metric tons and 500 tons, respectively). The quality of the sardines has, however, been below normal. As a result, fish-meal production has increased markedly, while canners are generally behind schedule.

During the July-September 1963 quarter, export prospects for Moroccan canned sardines improved. The decline in Portuguese production in the first half of 1963 helped create a more favorable competitive export position for Moroccan canners and this development was expected to increase sales.

The periodical, Maroc-Informations, in its issue of July 14-15, 1963, observed that the key to the problems of the Moroccan fishing industry is a reduction in fish export prices, which were estimated at 25 to 30 percent above world market prices. The solution advocated by the journal was modernization of the fishing fleet and fish-processing industry. A start in this direction has been taken in Tangier where US\$300,000 is being invested in a tuna cannery. The new cannery, which will not be in full operation until mid-1964, will have to use foreign tuna since landings by the local fishing fleet would not sustain capacity operation.

A French electronic fish-sounding device has been undergoing tests at Safi. If the sonar device is successful in locating schools of sardine, the new technique will be introduced in the fishing fleets of the major Moroccan fishing ports. (United States Embassy, Rabat, October 25, 1963.)

Note: See Commercial Fisheries Review, November 1963 p. 75.



## New Caledonia

## JAPANESE TO EXPAND TUNA FISHING BASE:

One of the large Japanese fishing companies, which is operating a tuna-fishing base at Noumea, New Caledonia, jointly with a French

## New Caledonia (Contd.):

firm is reported to be planning on constructing refrigeration facilities on that island in the near future. The facilities will include a 2,000-ton capacity cold storage, 70-ton capacity freezer, 40-ton ice-making plant, and a 1,500-ton capacity ice-storage plant.

Iced tuna delivered to the Noumea base are frozen aboard the Japanese freezership Eiyo Maru (2,600 gross tons) anchored at that port. The base has an annual export quota of 7,500 metric tons of frozen tuna, (Suisan Keizai Shimbun, November 15, 1963.)



## Nicaragua

## U. S. FISHERIES FIRM BEGINS SHRIMP PROCESSING AT EL BLUFF:

A Chicago fisheries firm has begun operations at the shrimp processing plant it recently purchased at El Bluff near Bluefields on the Caribbean coast. A Nicaraguan entity holds 10 percent of the stock and has an option on an additional 35 percent which has now been placed on the market for sale to Nicaraguans.

An official of one of the Chicago firm's shrimp processing plants went to Nicaragua to supervise the reorganization and new construction that was required at the plant. He plans to stay there until the plant is operating satisfactorily, at which time he will divide his time in alternate two-week periods between the El Bluff plant and another plant outside that country. A Nicaraguan manager will handle routine plant operations and all other personnel are local people.

The Chicago firm's representative has indicated that both he and company officials have been gratified and encouraged by the results of their operations in the 6 weeks since they have begun. They were able to locate and correct operational difficulties experienced by the former owners which strengthened their earlier opinion that the plant was not nearly as well designed and managed as it might have been. A great part of the former owners' investment in the plant went to correct faults in its original design. Freezing and processing buildings were located at a distance of some hundreds of yards from the sea and an expensive fill operation had to be undertaken to build the necessary road beds and railroad tracks over the swampy ground. These extravaganzas by the former owners were coupled with abortive attempts at economy that eventually cost the bankrupt firm in terms of both efficiency and money. They used, for instance, a cheaper ammonia that cut down their freezing capacity, and bought a used ice crushing machine that was entirely inadequate for their needs. Their maximum ice production was 15 tons in a ten-hour period. This bottleneck required vessels to spend an inordinate amount of time in port waiting for their ice supplies to be replenished. The new owners immediately began using a better grade of ammonia in the ice plant and bought a new ice crusher. Within the first two weeks of their operation, they increased ice production to 13 tons hourly and can now unload and reprovise ships with minimum loss of time in port.

The original owners had spent large sums on management housing, machine shops, road beds, and railroad tracks but had not built sufficient storage facilities. They

could not store more than 100,000 pounds of frozen shrimp at one time, which is not enough to provide an economic load for a refrigerated ship. The new management is constructing additional storage facilities and is making changes in the plant's layout which they expect will contribute to its efficiency. The plant was formerly open on three sides and sanitary requirements were not sufficiently rigorous to permit cleaned shrimp to pass United States' Health Authorities entrance requirements. There were no sanitary facilities at all for employees in the plant. The new management is importing stainless steel tables and instructing its employees in more advanced sanitary techniques so that the plant will be able to pass most rigid United States' sanitary requirements.

Quick freezing facilities can freeze 4,000 pounds every four hours to the existent capacity for conventional 24-hour freezing. Two new Diesel engines from the United States have been purchased to supplement equipment already installed which is of French make. Equipment is on order for cleaning and packing spiny lobster meat and fish fillets, and they hope to install a dry freezing operation and bread-ing plant in the future.

In its first 6 weeks the new owners have frozen and shipped 300,000 pounds of shrimp. In its two and one-half year history, the original owners never processed more than 950,000 pounds in any one year and the operation had required a minimum of 100,000 pounds monthly to meet costs. The new owners estimate that they will process 250,000 pounds monthly during the first year of operation and they expect a yearly production of 5 million pounds within a reasonably short period.

Employment in the plant proper as of November 1963 was 100 persons and the operation now has 20 vessels fishing with 5-man crews. The vessels have United States captains and are of United States registry. As soon as all improvements are completed, they will have 35 vessels and 300 employees at the plant. When that level is reached, they will require a subsidiary shipyard to service the fleet, which will employ additional people.

A second shrimp processing plant is under construction at Schooner Key near Bluefields which has applied for permits for 40 vessels. The new owners of the El Bluff plant estimate that their company will eventually create some 2,000 jobs directly or indirectly in the Bluefields and El Bluff area. (United States Embassy, Managua, November 30, 1963.)



## Norway

## ANTARCTIC WHALING INDUSTRY ENCOURAGED BY HIGHER OIL PRICES:

Attracted by the higher fall 1963 prices for whale oil (close to £80 or US\$224 per long ton as compared with £65 or \$182 in the 1962/63 season) and higher prices for whale meat (£35 or \$98 as compared with £25 or \$70) all four Norwegian whaling expeditions are participating in the 1963/64 Antarctic whaling season.

The total number of expeditions from all nations will be 16, or one less than the 1962/63 season. This year's quota is 10,000 blue whale units, or the equivalent of about 200,000 tons of oil. However, marine biologists have ex-

## Norway (Contd.):

pressed some doubts about achieving that figure, and they estimate that possibly only 150,000 to 160,000 tons will be produced. (United States Embassy, Oslo, October 16, 1963.)

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### EXPORTS OF CANNED FISHERY PRODUCTS, JANUARY-JUNE 1963:

Norway's exports of canned fishery products in January-June 1963 were down 14.0

oil. Smoked small sild sardines in oil, however, continued to be Norway's most important canned fish export, accounting for 43.0 percent of the quantity and 35.8 percent of the value of total exports of canned fishery products. Combined exports of smoked small sild sardines in oil, smoked brisling in oil, and kippered herring accounted for 72.4 percent of the quantity and 69.8 percent of the value of Norway's exports of canned fishery products in the first half of 1963. The leading buyers of Norwegian canned fishery products continued to be the United States and the Unit-

Table 1 - Norwegian Exports of Canned Fishery Products by Type, January-June 1963

Product	June			January-June		
	Quantity	Value		Quantity	Value	
		1,000 Kroner	US\$1,000		1,000 Kroner	US\$1,000
Smoked brisling in oil . . . . .	284	1,964	275	2,224	15,559	2,176
Smoked brisling in tomato . . . . .	42	235	33	139	778	109
Smoked small sild in oil . . . . .	510	2,131	298	5,552	23,338	3,264
Smoked small sild in tomato . . . . .	66	235	33	590	2,116	295
Unsmoked small sild in oil . . . . .	22	74	10	112	391	55
Unsmoked small sild in tomato . . . . .	3	10	1	15	56	8
Kippered herring (Kippers) . . . . .	162	684	96	1,570	6,539	914
Mackerel . . . . .	20	95	13	330	1,557	218
Roe, unclassified . . . . .	292	737	103	789	2,821	395
Soft herring roe . . . . .	96	485	68	473	2,293	321
Fish balls . . . . .	29	72	10	270	700	98
Other canned fish . . . . .	17	127	18	86	641	90
Shellfish . . . . .	139	1,512	211	766	8,330	1,165
Total . . . . .	1,682	8,361	1,169	12,916	65,119	9,108

Table 2 - Norwegian Exports of Canned Fishery Products<sup>1/</sup> by Country of Destination, January-June 1963

Country of Destination	June			January-June		
	Quantity	Value		Quantity	Value	
		1,000 Kroner	US\$1,000		1,000 Kroner	US\$1,000
Finland . . . . .	4	26	4	59	392	55
Sweden . . . . .	71	318	44	156	817	115
Belgium-Luxembourg . . . . .	21	100	14	345	1,632	228
Ireland . . . . .	7	30	4	130	414	58
France . . . . .	30	116	15	149	617	86
Netherlands . . . . .	14	43	6	92	320	45
United Kingdom . . . . .	368	1,542	216	2,337	9,839	1,376
Japan . . . . .	22	107	15	170	800	112
West Germany . . . . .	67	243	34	337	1,258	176
East Germany . . . . .	-	-	-	982	3,532	494
South Africa Republic . . . . .	84	380	53	671	2,806	392
Iraq . . . . .	-	-	-	7	27	4
Canada . . . . .	24	163	23	331	2,019	282
United States . . . . .	665	3,532	494	5,566	29,349	4,105
Australia . . . . .	118	427	60	713	2,841	397
New Zealand . . . . .	46	212	30	246	1,060	148
Other Countries . . . . .	62	243	34	527	2,010	281
Total <sup>2/</sup> . . . . .	1,603	7,482	1,046	12,818	59,733	8,354

<sup>1/</sup>Does not include exports of canned shellfish.

<sup>2/</sup>Totals are slightly larger than the combined exports of canned fish (excluding shellfish) shown in table 1.

Note: Norwegian kroner 7.15 equals US\$1.00.

percent in quantity and 13.3 percent in value from those in the same period of 1962, due mainly to smaller shipments of kippered herring and smoked small sild sardines in

ed Kingdom. (Norwegian Cannery Export Journal, October 1963.)

Note: See Commercial Fisheries Review, January 1963 p. 109.

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## Norway (Contd.):

**WITHDRAWAL FROM WHALING CONVENTION PROPOSED AGAIN:**

A Sandefjord, Norway, newspaper which often reflects the views of the whaling industry, has recently advocated that the Norwegian Government withdraw from the International Whaling Convention. According to this newspaper, the Soviet Union has pursued a policy of procrastination for 8 years regarding the signing of the agreement permitting international inspectors to be on board whaling vessels in the Antarctic. The Soviets do not want international inspectors to be in a position to ascertain whether the agreements on quotas and catching seasons are observed, nor do Soviet authorities want to reject the control agreement outright, the newspaper stated. (United States Embassy, Oslo, October 26, 1963.)



## Okinawa

**TUNA FISHING FLEET INCREASING:**

The Okinawan tuna-fishing fleet, which has steadily grown in recent years, is now said to total 25 vessels, aggregating 5,962 tons in gross vessel tonnage. By size, they consist of 14 vessels in the 100-200 ton class; 3 in the 200-300 ton class; 5 in the 300-400 ton class; and 3 over 400 tons. Of the 25 vessels, 11 are operating out of Okinawan ports, 12 in distant waters under contract to Japanese firms (includes 7 in the Atlantic Ocean, 3 in the Indian Ocean, and 2 in the Pacific Ocean based at Espiritu Santo, New Hebrides). Two vessels are scheduled to operate out of American Samoa. (Suisan Tsushin, November 6, 1963.)



## Pakistan

**EXTENSION OF TERRITORIAL WATERS TO 12 MILES ADVOCATED:**

Pakistan's Director of Marine Fisheries strongly advocated the extension of Pakistan's territorial waters from the present 3-mile limit to 12 miles. The Director pointed out that Iran had already extended her limits to 12 miles and India to 6 miles. Since Pakistan's fishing industry is undergoing rapid development and expansion, an extension of

territorial waters would increase the fishing area available for exclusive exploitation by Pakistan and would limit Iranian access to fishing grounds in West Pakistan and Indian access in East Pakistan. (United States Embassy, Karachi, November 9, 1963.)



## Peru

**FISH MEAL INDUSTRY TRENDS, THIRD QUARTER 1963:**

By the end of the third quarter of 1963, Peru's booming fish meal industry was feeling the impact of an unusually poor fishing season. Large stocks of fish meal were on hand at a time of slack demand, and the industry was faced with restricted bank and vendor credits. Inasmuch as the fish meal industry had become Peru's largest foreign exchange earner, a major employer, the basis of a vessel-building industry, and the user of millions of dollars worth of goods and services, the impact of stagnation was felt in many quarters. Importers were particularly hard hit, having sold heavily on credit to the fish meal plants. Commercial banks, finding themselves too heavily committed in a sluggish industry began restricting credit to a completely credit-based industry.

The financial structure of the Peruvian fishing industry and its satellite industries was subject to increasingly close scrutiny during the third quarter of 1963. In mid-1963, a situation of financial stringency developed in the fish meal industry somewhat paralleled to the situation prevailing three years ago, but with the important difference that the industry has not suffered from declining world market prices and speculation, as it did in 1960. After more than two years of overexpansion, when producers built new plants or extended existing ones and purchased new equipment and fishing vessels instead of taking advantage of good production and sales to pay debts and accumulate reserves, many elements of the industry found themselves heavily in debt, without working capital, and with sharply-curtailed bank credit. A study of the financial situation during the third quarter by a fisheries publication showed investment in the fish meal industry of nearly US\$190 million, of which US\$37 million represented invested capital, the remainder representing credits from banks, national and foreign suppliers, and national financing firms.

Although the long-term prospects of the fish meal industry continue to be bright, it has been estimated that it will take 6 months to a year for the industry to overcome its current financial problems, during which time many small plants may have to close for lack of working capital. The more substantial companies, which are better organized and controlled, probably will survive. A start was made toward consolidation of the debts of the industry when, through the efforts of its representatives, it received a US\$10 million loan from a United States bank. Although this is a small sum in relation to a total estimated indebtedness of US\$150 million, it constitutes a beginning. The Banco Industrial del Peru is handling loan operations for the United States bank, and reportedly has received 100 applications for loans from fisheries enterprises. Meanwhile, a coordinating committee has been formed to propose corrective long-term action and cope with some of the industry's immediate problems. This body will endeavor to consolidate the financial position of the industry by arranging medium and long-term loans as well as safeguarding price stability by keeping production in line with the development of new markets. Another factor of vital importance to be dealt with is a more rational control of production costs.

## Peru (Contd.):

Production of fish meal in 1963 probably will be considerably less than that earlier predicted (a possible 1.2 million metric tons has been mentioned) in view of a lengthy strike of anchovy fishermen in February and March, followed by a scarcity of anchovies between June and October. Anchovies began to reappear to some extent late in September, but fishing did not return to normal as soon as anticipated. Despite curtailed fishing for extended periods during the year, it is considered likely that Peru's fish meal exports for 1963 will be in excess of the 1,070,000 metric tons exported in 1962. (United States Embassy, Lima, November 19, 1963.)



## Philippines

CANNED MACKEREL AWARD:

The Philippine National Marketing Corporation (NAMARCO) has reported that winning bids have been determined for the mackerel tender issued in the fall of 1963. Of a total of 330,000 cases, 125,000 were to be purchased from United States suppliers for over \$825,000 (c. & f. Manila without congestion surcharge). Five United States firms participated. (United States Embassy, Manila, November 18, 1963.)



## Portugal

CANNED SARDINE SUPPLY REPORTED ADEQUATE TO MEET DEMAND:

Reports from various sources have mentioned that the Portuguese canned sardine industry was faced with a catastrophic fish shortage in 1963. Various Portuguese sources have indicated conflicting estimates of the total landings expected in 1963 and the late 1963 status of the canned fish industry, but none felt there is any really serious shortage of fish or that the industry will have difficulty supplying customary export markets. However, the fish landings were below average for the first nine months of 1963 and the canners were buying a smaller proportion of the available supply. Some comparative figures are shown in table.

While the January-September 1963, sardine landings were down about 15 percent from the similar period of 1962, the drop was not considered overly large by either the fishing or canning industries. The much

Portuguese Canned Sardine Production and Exports and Sardine Landings, January-September 1962-63

Product	January-September		Decline
	1963	1962	
	(1,000 Metric Tons)		%
<b>Sardines:</b>			
Canned .....	19,819	30,783	35.6
Exports .....	32,282	36,302	11.1
Landings, Jan.-Sept. .	159,314	69,781	15.0

1/Estimated.

Source: Production and export data: Portuguese Institute of Canned Fish, Catch data: *Boletim Mensal*.

larger decrease in the packs of canned sardines was also said to be of little concern because of accumulated stocks.

A spokesman for the Institute of Canned Fish explained that all sardines are sold at auction immediately after they are brought ashore. Canners know how much they can pay and still compete in the international canned fish market. When dealers who supply fresh sardines to local consumers go above that price, the canners generally drop out and wait for a drop in the price. The spokesman stated he was certain the canners would bid for sardines if they thought they might lose an export market because of being unable to deliver. (United States Embassy, Lisbon, November 29, 1963.)



## Senegal

FISH LANDINGS UP SHARPLY IN 1962:

In contrast to other segments of the Senegalese economy, the fishing industry prospered in 1962. Between 1959 and 1962 annual landings increased from 73,220 metric tons to 102,656 tons. Landings from traditional fisheries jumped from 63,000 tons to 87,594 tons. Tuna landings rose to 11,078 tons from 9,880 tons, and trawler landings from 340 tons to 3,984 tons. Fish canneries processed 4,695 tons in 1959 and 9,508 tons in 1962. (United States Embassy, Dakar, October 26, 1963.)



## Somalia Republic

DELEGATION STUDIESUNITED STATES FISHING INDUSTRY:

The U. S. Agency for International Development (AID) has sponsored a visit to the

**Somalia Republic (Contd.):**

United States by a top-level fishing industry team from the Somali Republic. The project reportedly involves a cross-section study of the United States fishing industry, including observations of harvesting, handling, processing by canning, freezing, drying and other curing methods, packaging, warehousing, and distribution. The Somali fishing delegation was said to have a special interest in the United States tuna industry, and the study was to take the group from Boston, Mass., to Southern California. The study team, accompanied by AID personnel, began its tour on November 8, 1963, and expected to complete its visit on January 3, 1964. The team was comprised of representatives of Government and industry.

**South Africa Republic****FISH MEAL ASSOCIATION  
CONTRACTS TO SELL TO JAPAN:**

The Chairman of the South African Fish Meal Producers' Association reported in October 1963 that a contract to sell R2 million (US\$2,784,000) worth of fish meal to Japan before the end of 1963 was concluded between his Association and the Japanese Importers' Association. The Chairman stated that this was "by far" the largest fish meal contract yet arranged with Japan, and added that negotiations were already under way for expected exports of R6 million (\$8,352,000) to Japan in 1964. (United States Embassy, Pretoria, October 17, 1963.)

**Sweden****EXPERIMENTAL MID-WATER PAIR-  
TRAWLING FOR LARGE  
HERRING SHOWS PROMISE:**

For some years, west coast fishermen of Sweden have fished herring in the North Sea with the mid-water trawl and bottom trawl, but it has always been believed that the large Icelandic herring would swim too fast to be caught in this way. A former Swedish fisherman, who is now Secretary of the Swedish West Coast Fishermen's Association, has thought otherwise. In 1963, he was able to put his theory to the test and it would seem he has been proved right.

In order to mount the experiment adequately, it was necessary to guarantee the fishermen equivalent earnings to those they could expect at that time of the year, when good fishing is expected in the North Sea. This guarantee was met by the Association's funds with the overhead costs of the expedition paid by the Government.

Four pairs of modern cutters took part. They were from 85-100 feet long and with engines of 600-800 hp. The nets used were modified Larsen type trawls of the kind normally used in the North Sea. All vessels were fitted with echo sounders, and two also had sonar sets. Fishing was carried out off the Icelandic coast, and the duration of the trip was five weeks.

Neither the weather nor the quantity of herring available were as good as expected, but small traces were found in 8-15 fathoms and these were fished. The quantity of fish obtained from these small traces came as a considerable surprise to the fishermen, who were accustomed to much heavier markings in the North Sea. Altogether 2,000 barrels were landed by the four pairs of cutters, and in view of the unfavorable weather and poor echo traces, this was better than had been expected.

As a result of the recent success of Norwegian and Icelandic purse seiners in the Icelandic herring fishery, there is some conjecture as to how much better this catch would have been given better knowledge of the grounds, favorable weather, and a sonar on each vessel, operated by a man trained in its use, as are the Icelanders. Next experiments in 1964 may provide the answers to these questions. (World Fishing, November 1963.)

**Taiwan****FISHERIES TRENDS, THIRD QUARTER 1963:**

According to the Taiwan Provincial Fisheries Bureau, fisheries production during the third quarter of 1963 amounted to 97,131 metric tons. During the July-September 1963 quarter, the deep sea fisheries produced 22,519 tons; inshore fisheries, 45,715 tons; coastal fisheries, 8,315 tons, and fish farming, 20,582 tons.

Fisheries production from all sources in the first 9 months of 1963 amounted to 266,877

## Taiwan (Contd.):

tons. The total production would have been greater except for losses due to January's frost, the spring drought, and September's typhoon.

The September 1963 typhoon damage to the fishing industry amounted to about NT\$10 million (US\$248,000), not including loss in expected catch. Most of the damage was sustained by fish harbor facilities and freshwater fish ponds.

During the third quarter of 1963, success was achieved in the artificial spawning of Chinese carp. Although still experimental, it was the first time fish culture authorities have been able to obtain large numbers of fry by the use of hormones to induce spawning. This operation will be expanded on a commercial scale in 1964 which may make it unnecessary to import the usual US\$100,000 worth of carp fry each year.

On September 27, 1963, the International Bank for Reconstruction and Development and the Taiwan Government signed an agreement calling for a US\$7.8 million loan to finance the foreign exchange construction costs of 16 deep-sea fishing vessels (thirteen 300-ton vessels and three 1,000-ton vessels). About 238 tuna boats now operate out of Taiwan and land an annual catch of about 9,000 metric tons of tuna. During the July-September 1963 quarter, a United States firm renewed its negotiations with the Kaohsiung Fishermen's Association for contracting Chinese fishing companies to fish in waters of American Samoa.

The Taiwan Provincial Government decided that the price of Diesel oil for fishing boats would be reduced on November 1, 1963, by NT\$192 (\$4.80) (including reduction in commodity tax collection) per 1,000 liters. This reduction should help cut the cost of operation of trawlers and all inshore boats using Diesel engines. (United States Embassy, Taipei, November 20, 1963.)

Note: See *Commercial Fisheries Review*, November 1963 p. 80; August 1963 p. 107; and January 1963 p. 117.



## Thailand

## LIFTING OF BAN ON FISH IMPORTS BY MALAYA REQUESTED:

The Director-General of Thailand's Fishery Department reported on October 26, 1963, that the Ministry of Agriculture had requested the Ministry of Foreign Affairs to open negotiations with Malaysia for a relaxation of the Malaysian ban on imports of Thai fish. The ban, originally imposed because of a cholera epidemic in some parts of Thailand, has remained in effect despite the end of the epidemic conditions.

In the past, close to 60 percent of the fish consumed in Malaysia came from Thailand. The Director-General reported that a great increase in the smuggling of fish into Malaysia from Thailand has followed the imposition of the ban, resulting in a considerable loss to Thailand in export taxes. (United States Embassy, Bangkok, November 21, 1963.)



## Tunisia

## DETENTION OF ITALIAN FISHING VESSELS:

Two Italian fishing vessels were escorted into port by the Tunisian Coast Guard on October 22, 1963. The Italian vessels were said to have violated the Italian-Tunisian fisheries agreement concluded early in 1963. Specifically, it appeared that the trawlers were charged with fishing in the Gulf of Gabes inside the 50-meter (about 27 fathoms) depth line, an area in which Tunisia claims exclusive fishing rights. (United States Embassy, Tunis, November 2, 1963.)

Note: See *Commercial Fisheries Review*, January 1963 p. 119.

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## FISHING VESSELS TO BE BUILT IN YUGOSLAVIA UNDER ECONOMIC AID PROGRAM:

A series of economic and technical assistance documents were signed in Tunis on October 23, 1963, by the Director of the Budget in the Ministry of Plan and Finance, and the Director of the Africa-Near East Office of the Yugoslav Secretariat of Foreign Commerce. The signing took place following the second meeting of the Yugo-Tunisian Mixed Commission established by the Economic Assistance Agreement of February 2, 1962, the



## Tunisia (Contd.):

first having been held in Belgrade July 17-20, 1962. It is understood that the Commission was chiefly concerned with the utilization of the US\$5 million credit extended by the 1962 agreement, and with the implementation of the August 24, 1961, agreement on technical and scientific cooperation.

According to the communiqués issued at the end of the talks, more than one-third of the credit, repayable over 8 years with 3 percent interest, has now been either expended or obligated. Items mentioned as falling within this portion of the credit included a newly placed order for 10 steel-hulled, fishing vessels from the Yugoslav trade organization (Brodoimpeks). Under the terms of a contract signed October 26, 1963, the vessels are to be delivered within 14 months. Brodoimpeks will provide technical training in Yugoslavia for marine engineers and radio operators for the fleet and will furnish a consulting engineer to the Office National des Pêches (ONP) for an unspecified period. The vessels will be equipped with sonar, radio, and refrigeration units.

Utilization of the Yugoslav credit has proceeded slowly. Twenty-one months after the signing of the agreement there was no firm evidence that any substantial amount of equipment had actually arrived. (The five 60-ton seiners reported as having been delivered under the credit in August, 1962, now appear to have been the result of a barter-purchase in the context of the bilateral trade agreement concluded on March 19, 1962.)

It is not expected that Yugoslav assistance will fill all the needs of Office National des Pêches. This office has expressed interest in engineering services that United States firms might render for the setup of maintenance shops at Bizerte, Mahdia, Sousse, Sfax, and another one in southern Tunisia. The needs of ONP include two trawlers for Atlantic fishing, a total of 100 fishing vessels, marine motors, and radio equipment. (United States Embassy, Tunis, November 16, 1963.)



## United Kingdom

## FISHERY LOANS INTEREST RATES REVISED:

The British White Fish Authority announced that, as a result of changes in the rates of in-

terest charged to them, their own rates on advances made from October 12, 1963, would be as follows:

Vessels, new engines, nets and gear: on loans for not more than five years, 5 percent (decrease  $\frac{1}{8}$  percent); on loans for more than five years but not more than 10 years, 5 percent (decrease  $\frac{1}{4}$  percent); on loans for more than 10 years but not more than 15 years,  $5\frac{3}{8}$  percent (decrease  $\frac{1}{8}$  percent); on loans for more than 15 years but not more than 20 years,  $5\frac{5}{8}$  percent (no change).

Processing plants: on loans for not more than 20 years,  $6\frac{1}{2}$  percent (no change). (Fishing News, October 25, 1963.)

Note: See Commercial Fisheries Review, August 1963 p. 112.

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## FLEET OF FREEZERSHIP-TRAWLERS EXPANDING:

Another freezership-fishing vessel is on order for Hull, England. The subsidiary of a large fishing company has placed the order for the new vessel with a shipyard in Aberdeen. The new vessel will be a 242-foot Diesel-electric stern trawler with a capacity of 500 tons of frozen fish. The £500,000 (US\$1.4 million) 2,700-brake horsepower vessel is expected to be delivered by the spring of 1965.

The expanding all-freezer fleet at Hull has caused the dock authorities to have second thoughts on the whole future of this trend and a plan has already been examined for coping with the future requirements of the port's growing all-freezer fleet. (World Fishing, November 1963.)

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## IMPROVED-TYPE UNDERWATER TV CAMERA TO AID IN MARINE RESEARCH:

As an aid to its current research program into the general behavior and spawning habits of fish, scientists at the British Lowestoft Fisheries Laboratory are to use a Marconi television camera able to operate on the sea bed.

The equipment ordered by the Laboratory is completely automatic in operation, and can be enclosed, with its control unit, in a pressure casing on the seabed without adjustments of any kind having to be made. A single supply of electrical power runs the entire channel on the seabed, and the output television

## United Kingdom (Contd.):

signal is in a final form which can be carried over an almost unlimited length of cable to scientists on the surface. As a result, they will be able to study the fish and operation of trawls as much as 12,000 feet away from the ship on a 21-inch television monitor screen. The pressure casing to contain the equipment will be designed and built by the Fisheries Laboratories at Lowestoft.

The great depth at which this study can be made is possible only because of the extreme stability of this camera channel in unattended operation, and its ability to give excellent pictures at very low light levels. In all previous underwater television work the camera control unit has been installed in the vessel with only the camera head itself on the seabed.

The length of cable connecting the camera to its control unit, and hence, the maximum operating depth of the system has been limited in the past to about 1,000 feet, because of the delay imposed on the essential synchronizing pulses which control the camera, but which are generated in the control unit. With this new camera, however, the on/off switch is the only control used in the entire channel once the equipment has been set up. (World Fishing, October 1963.)

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SIXTEEN NATIONS INVITED TO  
CONFERENCE ON FISHERIES PROBLEMS:

The British Government invited its six European Free Trade Association (EFTA) partners and the six European Economic Community (EEC) countries to a fisheries conference which opened on December 3, 1963, in

London. Iceland, the Irish Republic, and Spain also attended the conference. The talks were expected to last about four days.

The purpose of the 16-nation meeting was to consider trade in fish. An important question was that of fishing limits.

The former British Lord Privy Seal stated in the House of Commons in April 1963 that other subjects, such as the conservation of fisheries, would also be discussed.

A London newspaper, commenting on possible results of the conference, said that while no final common policy was likely, the talks could lay the groundwork for a fisheries policy. The EEC had not worked out a fisheries policy of its own and was not prepared to undertake any commitments until it had done so.

The newspaper also stated that the British made it clear to the countries invited to the conference that they were concerned about the tendency of countries to extend their territorial waters. These extensions are said to have imposed heavy hardships on British deep-sea fishing fleets. The British thus feel obliged to consider strengthening the rights of their own fishermen in British waters.

To maintain freedom of action, Britain has indicated that she will no longer participate in the North Seas Fisheries Convention of 1882, which binds parties to the Convention to a three-mile fishery limit. Britain will cease to be bound to this after June 24, 1964.

In holding the conference before the June date, the newspaper stated Britain hoped that the countries concerned would be able to work out a satisfactory settlement. (EFTA Reporter No. 86, November 12, 1963.)



## Foreign Fisheries Briefs

### EAST GERMAN FISHERY RESEARCH VESSEL PARTICIPATES IN JOINT PROJECT:

The East German research vessel Ernest Haeckel, commissioned in May 1963, was reported to be in the North Atlantic off Labrador doing oceanographic research and exploratory fishing. Now on its third voyage, the vessel, equipped with the latest electronic equipment, previously explored fishing grounds in the North Sea. This research is in partial fulfillment of a July 28, 1962, tripartite agreement on fishery research and oceanography between East Germany, Poland, and the U.S.S.R. (Unpublished sources.)

### SOVIETS PARTICIPATE IN INDIAN OCEAN TUNA FISHERY:

Soviet tuna-fishing vessels are reported operating in the Indian Ocean and making good catches. The tuna fleet is accompanied by a research vessel equipped to conduct both oceanographic work and exploratory fishing. The flagship of the fleet, the Nora, a Japanese-built vessel, has been extensively remodeled to increase its carrying capacity. (Unpublished sources.)

### SOVIET FISHING VESSELS MAY BASE AT TRINIDAD:

According to the captain of the Soviet medium trawler Obraztsov, Port-of-Spain, Trini-

dad, may become a regular port of call for Soviet vessels operating in the Caribbean Sea area. The Soviet fishing vessel anchored in the harbor of Port-of-Spain on October 24, 1963, and remained there for several days while arrangements were being made for representation by a local agent. The captain reported that the vessel had been fishing with about 15 others in the Caribbean Sea and adjacent waters off Mexico and Cuba and was returning to its home port of Kaliningrad on the Baltic Sea. (Press reports from Port-of-Spain, Trinidad.)

### SOVIETS LAUNCH NEW FISHERY RESEARCH VESSEL:

A new Soviet fishery research vessel, the Akademik Knipovich, has been launched at the Nikolayev shipyards on the Black Sea. Its research laboratory is equipped with a hydrostatic device which can put a man and a TV transmitter underwater. The vessel has an experimental cannery, low-temperature freezers, and can be air-conditioned for voyages in tropical climates. The new vessel belongs to VNIRO (Moscow), the Soviet fishery administrative organization which operates the fishery research submarine Severianka. (Moskovskaia Pravda, July 21, 1963.)

Notes: (1) These briefs were abstracted and compiled by the U. S. Bureau of Commercial Fisheries, Branch of Foreign Fisheries and Trade.

(2) See Commercial Fisheries Review, December 1963 p. 84; November 1963 p. 84; September 1963 p. 97; August 1963 p. 112.



U. S. DEPARTMENT OF THE INTERIOR  
Fish and Wildlife Service  
Sep. No. 699

### "LOST" PART OF CROMWELL CURRENT FOUND

A scientist at the Scripps Institution of Oceanography has discovered the "lost" eastern portion of the Cromwell Current in the Pacific Ocean. He found that the current veers north of the Galapagos Islands, becoming weaker and much deeper, and then returns to the equator further east.

Discovered only in 1951, the Cromwell Current differs from all other ocean currents--for example, the Gulf Stream--in that it consists of water no different in temperature or biological content from that on either side. It is a large, shallow stream flowing east beneath the equator from the western Pacific to the Galapagos Islands. There--until the discovery of the missing part--the current previously seemed to vanish. (Sea Secrets, April 1963.)



# FEDERAL ACTIONS



## Department of Commerce

### AREA REDEVELOPMENT ADMINISTRATION

#### STUDY OF IMPACT OF NEW ALASKA FERRY SYSTEM AUTHORIZED:

A \$49,000 technical assistance study of the economic impact of the new Alaska Ferry System on the economy of southeastern Alaska has been approved by the Area Redevelopment Administration (ARA) of the U. S. Department of Commerce. The study will take approximately one year. Traffic carried by the ferry system, inaugurated in January 1963, has already equaled previous forecasts of traffic projected through 1966. The study will cover the ferry's first year of operation and will identify new industries that could be established or expanded as a result of the ferry system to aid in creating all-season employment for the area's labor forces.

### BUREAU OF THE CENSUS

#### SURVEY OF DISTRIBUTORS STOCKS OF CANNED FOODS:

Notice of consideration having appeared in the Federal Register of October 31, 1963, the final notice of determination was published in the Federal Register of December 4, 1963, as follows:

In conformity with the Act of Congress approved August 31, 1954, 13 U.S.C. 181, 224, and 225, and due Notice of Consideration having been published October 31, 1963 (28 F.R. 11647), pursuant to said act, I have determined that year-end data on stocks of 29 canned and bottled products, including vegetables, fruits, juices, and fish, are needed to aid the efficient performance of essential governmental functions, and have significant application to the needs of the public and industry and are not publicly available from nongovernmental or other governmental sources. This is a continuation of the survey conducted in previous years.

All respondents will be required to submit information covering their December 31, 1963 inventories of 29 canned and bottled vegetables, fruits, juices, and fish. Reports will not be required from all firms but will be limited to a scientifically selected sample of wholesalers

and retail multiunit organizations handling canned foods, in order to provide year-end inventories of the specified canned food items with measured reliability. These stocks will be measured in terms of actual cases with separate data requested for "all sizes smaller than No. 10" and for "sizes No. 10 or larger". In addition, a number of selected multiunit firms will be requested to provide information on the location of establishments maintaining canned food stocks that are not currently reporting in the Canned Food Survey.

Report forms will be furnished to firms covered by the survey. Additional copies of the forms are available on request to the Director, Bureau of the Census, Washington 25, D.C.

Reports are due 8 days after receipt of the report forms.

I have therefore directed that this annual survey be conducted for the purpose of collecting these data.

RICHARD M. SCAMMON,  
*Director,*  
*Bureau of the Census.*



## Department of Health, Education, and Welfare

### PUBLIC HEALTH SERVICE

#### STUDY OF FISH KILLS IN LOUISIANA:

The U. S. Public Health Service announced on December 4, 1963, that it was sending a team of two nationally-known aquatic biologists to help the State of Louisiana find out what has been causing fish deaths in the lower Mississippi River and the Gulf Coast.

The Chief of Louisiana's Division of Water Pollution Control had requested assistance from the Public Health Service after receiving reports that the fish may be dying as far upstream as St. Louis, Mo.

In his request for assistance, the Louisiana official said that he asked the Public Health Service to cooperate with the State as



a preventative measure to find the causes of the fish dying.

In response to this request, the Public Health Service is sending a fishery toxicologist and a microbiologist, both of the Robert A. Taft Sanitary Engineering Center in Cincinnati, to help the State.

The two Federal biologists reported to the State's water pollution laboratory in Baton Rouge on December 3, 1963. With headquarters there, the two scientists will work with the State team in the affected area.

Fish deaths similar to those now occurring have been reported from time to time since the winter of 1960. Louisiana has been investigating the cause of these deaths with help from other State and Federal agencies ever since the deaths were first reported.

The Public Health Service will take samples further upstream from the river waters and river bottoms for comparison purposes with samples already taken in the lower Mississippi. The States of Missouri and Illinois have been asked to send samples to the Public Health Service's Sanitary Engineering Center where these samples and those collected from the Service's National Water Quality Network will be examined carefully for clues to help solve the riddle of what is causing the fish deaths. (U. S. Public Health Service, press release, December 4, 1963.)



## Department of the Interior

### INTERNATIONAL REGULATORY AGENCIES (FISHING AND WHALING)

#### NORTH PACIFIC HALIBUT FISHERY REGULATIONS:

Revised regulations of the International Pacific Halibut Commission approved by the United States June 8, 1963, pursuant to the Pacific Halibut Fishery Convention between the United States and Canada were issued as a revision to Part 301 of Title 50--Wildlife and Fisheries--Code of Federal Regulations and published in the Federal Register, October 23, 1963, as follows:

### Chapter III--International Regulatory Agencies (Fishing and Whaling)

#### PART 301--PACIFIC HALIBUT FISHERIES

Regulations of the International Pacific Halibut Commission adopted pursuant to the Pacific Halibut Fishery Convention between the United States of America and Canada, signed March 2, 1953: Part 301 of Title 50 is revised to read as follows:

- |        |  |
|--------|--|
| Sec.   | Regulatory areas.                        |
| 301.1  | Length of halibut fishing seasons.       |
| 301.2  | Closed seasons.                          |
| 301.3  | Catch limits in areas 2, 3A and 3B       |
| 301.4  | North Triangle.                          |
| 301.5  | Size limits.                             |
| 301.6  | Licensing of vessels.                    |
| 301.7  | Retention of halibut taken under permit. |
| 301.8  | Conditions limited validity of permits.  |
| 301.9  | Statistical return by vessels.           |
| 301.10 | Statistical return by dealers.           |
| 301.11 | Dory gear prohibited.                    |
| 301.12 | Retention of halibut taken by nets.      |
| 301.13 | Retention of tagged halibut.             |
| 301.14 | Responsibility of master.                |
| 301.15 | Supervision of unloading and weighing.   |
| 301.16 | Sealing of fishing equipment.            |
| 301.17 | Previous regulations superseded.         |

**AUTHORITY:** §§ 301.1 to 301.17 issued under Art. III, 50 Stat., Part II, 1353.

#### § 301.1 Regulatory areas.

(a) The "convention waters" which include the territorial waters and the high seas off the western coasts of Canada and the United States of America including the southern and the western coasts of Alaska shall be divided into the following areas, all directions given being magnetic unless otherwise stated.

(b) Area 1 (south of Willapa Bay) shall include all convention waters southeast of a line running northeast and southwest through Willapa Bay Light on Cape Shoalwater, as shown on Chart 6185, published in November 1947, by the United States Coast and Geodetic Survey, which light is approximately latitude 46°43'17" N., longitude 124°04'15" W.

(c) Area 2 (Willapa Bay to Cape Spencer) shall include all convention waters off the coasts of the United States of America and of Alaska and of Canada between Area 1 and a line running through the most westerly point of Glacier Bay, Alaska, to Cape Spencer Light as shown on Chart 6304, published in June 1940, by the United States Coast and Geodetic Survey, which light is approximately latitude 58°11'57" N., longitude 136°38'18" W.; thence south one-quarter east.

(d) Area 3A (Cape Spencer to Shumagin Islands) shall include all the convention waters off the coast of Alaska that are between Area 2 and a straight line running southeast one-half east from the highest point on Kupreanof Point, which highest point is approximately latitude 55°34'08" N., longitude 159°36'00" W.; the highest point on Kupreanof Point shall be determined from Chart 8859 as published May 1954 (2d Edition) by the United States Coast and Geodetic Survey.

(c) Area 3B South (Shumagin Islands to Cape Wrangell, Attu Island, not including Bering Sea) shall include all convention waters off the coast of Alaska that are between Area 3A and a straight line running west northwest from Cape Wrangell, the westernmost extremity of Attu Island at a point approximately latitude 52°55'20" N., longitude 172°26'50" E., and that are south of straight lines running from Cape Kabuch Light at the head of Ikatan Bay, which light is approximately latitude 54°49'00" N., longitude 163°21'36" W.; thence to Cape Sarichef Light at the western end of Unimak Island, which light is approximately latitude 54°36'00" N., longitude 164°55'42" W.; thence to the head of Pumicestone Bay on Unalaska Island at a point approximately latitude 53°31'30" N., longitude 166°58'20" W.; thence to Ananuliak Island Light on the south-west side of Unimak Island, which light is approximately latitude 52°59'48" N., longitude 168°55'06" W.; thence to Segum Island Light, which light is approximately latitude 52°23'12" N., longitude 172°26'12" W.; thence to Cape Amagalik on Tanaga Island, which cape is approximately latitude 51°40'40" N., longitude 178°07'00" W.; thence to Aleut Point at the northwest end of Amchitka Island, which point is approximately latitude 51°38'20" N., longitude 178°37'15" E.; thence to Cape Wrangell. The positions of Cape Kabuch Light and Cape Sarichef Light were determined from Chart 8860 published in March 1958 (13th Edition), revised August 1961; the position of the head of Pumicestone Bay and Ananuliak Island Light were determined from Chart 8861, published in May 1942 (1st Edition), revised August 1961; the position of Segum Island Light was determined from Chart 8862, published in June 1960 (3rd Edition); the position of Cape Amagalik was determined from Chart 8863, published in May 1959 (6th Edition); the position of Aleut Point was determined from Chart 8864, published in June 1962 (6th Edition); and the position of Cape Wrangell was determined from Chart 8865, published 1944 (1st Edition), revised August 1962, all charts as published by the United States Coast and Geodetic Survey.

(f) Area 3B North (Bering Sea exclusive of Area 3B North Triangle) shall include all convention waters which are not included in Areas 1, 2, 3A, 3B South and 3B North Triangle.

(g) Area 3B North Triangle (in Bering Sea) shall include all the convention waters within the following boundary as stated in terms of the magnetic compass, unless otherwise indicated; from Cape Sarichef Light at the western end of Unimak Island, which light is approximately latitude 54°36'00" N., longitude 164°55'42" W., west along the boundary line of Area 3B South, as described in paragraph (e) of this section, to the point of intersection with the meridian of 170° west at a point approximately latitude 52°48'00" N.; thence true north to a point northeast of St. Paul Island, approximately latitude 57°15'00" N., longitude 170°00'00" W.; thence to the point of origin at Cape Sarichef Light. The position of Cape Sarichef was determined from Chart 8860 published in March 1958 (13th Edition), revised August 1961. The position of the point northeast of

St. Paul Island was determined from Chart 8995, published June 1954 (5th Edition), all charts as published by the United States Coast and Geodetic Survey.

#### § 301.2 Length of halibut fishing seasons.

(a) In Area 1, the halibut fishing season shall commence and terminate at the same time as the halibut fishing season in Area 2 shall commence and terminate.

(b) In Area 2, the halibut fishing season shall commence at 6:00 p.m. on the 9th day of May and terminate at 6:00 p.m. on a date to be determined and announced under paragraph (b) of § 301.4.

(c) In Area 3A, the halibut fishing season shall commence at 6:00 p.m. of the 9th day of May and terminate at 6:00 p.m. on a date to be determined and announced under paragraph (b) of § 301.4.

(d) In Area 3B South, the halibut fishing season shall commence at 6:00 p.m. of the 19th day of April and terminate at 6:00 p.m. of the 15th day of October.

(e) In Area 3B North, the halibut fishing season shall commence at 6:00 p.m. of the 25th day of March and terminate at 6:00 p.m. of the 15th day of October.

(f) In Area 3B North Triangle, the halibut fishing season shall commence at 6:00 p.m. of the 25th day of March and terminate at 6:00 p.m. on a date to be determined and announced under paragraph (b) of § 301.4, or at 6:00 p.m. of the 15th day of October, whichever is earlier.

(g) All hours of opening and closing of areas in this section and other sections of the regulations of this part shall be Pacific Standard Time, except in Area 3B North and in Area 3B North Triangle where they shall be local standard time.

#### § 301.3 Closed seasons.

(a) Under paragraph 1 of Article I of the Convention, all convention waters shall be closed to halibut fishing except as provided in § 301.2.

(b) All convention waters, if not already closed under other provisions of the regulations of this part, shall be closed to halibut fishing at 6:00 p.m. of the 30th day of November and shall remain closed until reopened as provided in § 301.2, and the retention and landing of any halibut caught during this closed period shall be prohibited.

(c) Nothing contained in these regulations shall prohibit the fishing for species of fish other than halibut during the closed halibut seasons, provided that it shall be unlawful for a vessel to have halibut aboard, or for any person to have halibut in his possession while so engaged except as provided for in § 301.7. Nor shall anything in these regulations prohibit the International Pacific Halibut Commission, hereafter in the regulations of this part referred to as "the Commission", from conducting or authorizing fishing operations for investigation purposes as provided for in paragraph 3 of Article I of the Convention.

#### § 301.4 Catch limits in Areas 2, 3A and 3B North Triangle.

(a) The quantities of halibut to be taken during the halibut fishing seasons

in areas with catch limits shall be limited to 28,000,000 pounds in Area 2, to 34,000,000 pounds in Area 3A, and to 11,000,000 pounds in Area 3B North Triangle, each of the above quantities to consist of salable halibut and the weights in each limit to be computed as with heads off and entrails removed.

(b) The Commission shall as early in the said year as is practicable determine and announce the date on which it deems each limit of catch defined in paragraph (a) of this section will be attained, and the limit of each such catch shall then be that which shall be taken prior to said date, and fishing for halibut in the area to which each limit applies shall at that date be prohibited until each area is reopened to halibut fishing as provided in § 301.2, and provided that if it shall at any time become evident to the Commission that the limit will not be reached by such date, it may substitute another date.

(c) Catch limits shall apply only to the halibut fishing season in Area 2 and to the halibut fishing season in Area 3A and to the halibut fishing season in Area 3B North Triangle.

#### § 301.5 Size limits.

The catch of halibut to be taken from all areas shall be limited to halibut which with head on are 26 inches or more in length as measured from the tip of the lower jaw to the extreme end of the middle of the tail or to halibut which with the head off and entrails removed are 5 pounds or more in weight, and the possession of any halibut of less than the above length, or the above weight, according to whether the head is on or off, by any vessel or by any master or operator of any vessel or by any person, firm or corporation, is prohibited.

#### § 301.6 Licensing of vessels.

(a) All vessels of any tonnage which shall fish for halibut in any manner or hold halibut in possession in any area, or which shall transport halibut otherwise than as a common carrier documented by the Government of the United States or of Canada for the carriage of freight, must be licensed by the Commission, provided that vessels of less than five net tons or vessels which do not use set lines need not be licensed unless they shall require a permit as provided in § 301.7.

(b) Each vessel licensed by the Commission shall carry on board at all times while at sea the halibut license thus secured whether it is validated for halibut fishing or endorsed with a permit as provided in § 301.8, and this license shall at all times be subject to inspection by authorized officers of the Governments of Canada or the United States or by representatives of the Commission.

(c) The halibut license shall be issued without fee by the customs officers of the Governments of Canada or the United States or by representatives of the Commission or by fishery officers of the Governments of Canada or the United States at places where there are neither customs officers nor representatives of the Commission. A new license may be issued by the officer accepting statistical return at any time to vessels which have furnished proof of loss of the license form previously issued, or when there shall be no further space for record thereon, providing the receipt of statistical

return shall be shown on the new form for any halibut or other species taken during or after the voyage upon which loss occurred.

(d) The halibut license of any vessel shall be validated before departure from port for each halibut fishing operation for which statistical return is required and at such times as required by other provisions of the regulations in this part. This validation of a license shall be by customs officers or by fishery officers of the Governments of Canada or the United States when available at places where there are no customs officers and shall not be made unless the area in which the vessel will fish is entered on the license form and unless the provisions of § 301.9 have been complied with for all landings and all fishing operations since issue of the license, provided that if the master or operator of any vessel shall fail to comply with the provisions of § 301.9, the halibut license of such vessel may be validated by customs officers or by fishery officers upon evidence either that there has been a judicial determination of the offense or that the law's prescribing penalties therefor have been complied with, or that the said master or operator is no longer responsible for, nor sharing in, the operations of said vessel.

(e) The halibut license of any vessel fishing for halibut in Area 3B South when Area 3A is closed to halibut fishing must be validated at Sand Point, Alaska prior to such fishing, except as provided in paragraph (f) of this section.

(f) Any vessel already fishing in Area 3B South prior to the date of closure of Area 3A may continue to fish in said area until first entry at a port or place with a validating officer or until any halibut is unloaded. The vessel must comply with paragraph (g) of this section when it departs from Area 3B South.

(g) The halibut license of any vessel departing from Area 3B South into Area 3A with any halibut on board when Area 3A is closed to halibut fishing, must be validated at Sand Point, Alaska subsequent to fishing and prior to such departure.

(h) The halibut license of any vessel fishing for halibut in Area 3B North or in Area 3B North Triangle must be validated at Sand Point, Alaska, both prior to such fishing and prior to unloading any halibut at any port or place other than Sand Point, Alaska.

(i) A halibut license shall not be validated for departure for halibut fishing in Areas 1 or 2 more than 48 hours prior to the commencement of any halibut fishing season in said areas.

(j) A halibut license shall not be validated for departure for halibut fishing in Areas 3A or 3B South or 3B North or 3B North Triangle from any port or place inside said areas more than 48 hours prior to the commencement of the halibut fishing season in each of said areas, except that a halibut license validated for fishing in Area 3B North or in Area 3B North Triangle prior to the opening of Area 3B South may at the same time be validated for halibut fishing in Area 3B South when the latter area is opened; nor shall a halibut license be validated for departure for halibut fishing in Area 3A from any port or place outside said area more than 5 days prior to commencement of the halibut fishing season in said area.

(k) A halibut license shall not be valid for halibut fishing in more than one of Areas 1, 2 or 3A, as defined in § 301.1, during any one trip nor shall it be revalidated for halibut fishing in another of said areas while the vessel has any halibut on board.

(l) A halibut license may be validated for halibut fishing in Areas 3A and 3B South except that when Area 3A is closed such validation shall be subject to the conditions contained in paragraphs (e), (f) and (g) of this section and to any other applicable provisions of these regulations.

(m) A halibut license may be validated for halibut fishing in more than one of Areas 3B South, 3B North or 3B North Triangle provided that when Area 3B North Triangle is open to halibut fishing the master or operator of the vessel shall declare in which one of the three said areas the vessel intends to fish for halibut, and provided the master or operator shall report by radio to any authorized officer at Sand Point, Alaska the intention of the vessel to shift its fishing activities to another of said areas, the date and approximate time of the shift and the amount of halibut caught in Area 3B North Triangle that is on board at the time of shifting, and such radio report shall be recorded at the time in the log book of the vessel.

(n) A halibut license shall not be valid for halibut fishing in any area closed to halibut fishing nor for the possession of halibut in any area closed to halibut fishing except while in actual transit to an area open to halibut fishing, or to or within a port of sale and as provided in paragraph (q) of this section. The said license shall become invalid for the possession of halibut if the licensed vessel is fishing or attempting to fish for any species of fish in any area closed to halibut fishing, or if the vessel has not complied with the provisions of § 301.16, if applicable.

(o) Any vessel which is not required to be licensed for halibut fishing under paragraph (a) of this section shall not possess any halibut of any origin in any area closed to halibut fishing except while in actual transit to or within a port of sale.

(p) A halibut license shall not be valid for halibut fishing in any area while a permit endorsed thereon is in effect, nor shall it be validated for halibut fishing while halibut taken under such permit is on board.

(q) A halibut license when validated for halibut fishing in Area 3A shall not be valid for the possession of any halibut in Area 2 if said vessel is in possession of baited gear more than 25 miles from Cape Spencer Light, Alaska; and a halibut license when validated for halibut fishing in Area 3B South or in Area 3B North or in Area 3B North Triangle shall not be valid for the possession of any halibut in Area 3A, when Area 3A is closed to halibut fishing, if said vessel is in possession of baited gear more than 20 miles by navigable water route from the boundary between Areas 3A and 3B South.

(r) No person on any vessel which is required to have a halibut license under paragraph (a) of this section shall fish for halibut or have halibut in his possession, unless said vessel has a valid license issued and in force in conformity with the provisions of this section.

#### § 301.7 Retention of halibut taken under permit.

(a) There may be retained for sale on any vessel which shall have a permit as provided in § 301.8 such halibut as is caught incidentally to fishing by that vessel in any area except in Area 3B North Triangle after it has been closed to halibut fishing under § 301.2 or § 301.4 with set lines (of the type commonly used in the Pacific Coast halibut fishery) for other species, not to exceed at any time one pound of halibut for each seven pounds of salable fish, actually utilized, of other species not including salmon or tuna; and such halibut may be sold as the catch of said vessel, the weight of all fish to be computed as with heads off and entrails removed, provided that it shall not be a violation of this regulation for any such vessel to have in possession except in Area 3B North halibut in addition to the amount herein allowed to be sold if such additional halibut shall not exceed thirty percent of such amount and shall be forfeited and surrendered at the time of landing as provided in paragraph (d) of this section.

(b) Halibut retained under such permit shall not be filleted, filched, steaked or butchered beyond the removal of the head and entrails while on the catching vessel.

(c) Halibut retained under such permit shall not be landed or otherwise removed or be received by any person, firm or corporation from the catching vessel until all halibut on board shall have been reported to a customs, fishery or other authorized enforcement officer of the Governments of Canada or the United States by the master or operator of said vessel and also by the person, firm or corporation receiving the halibut, and no halibut or other fish shall be landed or removed or be received from the catching vessel, except with the permission of said officer and under such supervision as the said officer may deem advisable.

(d) Halibut retained under such permit shall not be purchased or held in possession by any person other than the master, operator or crew of the catching vessel in excess of the proportion allowed in paragraph (a) of this section until such excess, whatever its origin, shall have been forfeited and surrendered to the customs, fishery or other authorized officers of the Governments of Canada or the United States. In forfeiting such excess, the vessel shall be permitted to surrender any part of its catch of halibut, provided that the amount retained shall not exceed the proportion herein allowed.

(e) Permits for the retention and landing of halibut caught in all convention waters in the year 1963 shall become invalid at 6:00 p.m. of the 15th day of November of said year.

#### § 301.8 Conditions limiting validity of permits.

(a) Any vessel which shall be used in fishing for other species than halibut in any area except in Area 3B North Triangle after it has been closed to halibut fishing under § 301.2 or § 301.4 must have a halibut license and a permit if it shall retain, land or sell any halibut caught incidentally to such fishing or possess any halibut of any origin during such fishing, as provided in § 301.7.



(b) The permit shall be shown by endorsement of the issuing officer on the face of the halibut license form held by said vessel and shall show the area or areas for which the permit is issued.

(c) The permit shall terminate at the time of the first landing thereafter of fish of any species and a new permit shall be secured before any subsequent fishing operation for which a permit is required.

(d) A permit shall not be issued to any vessel which shall have halibut on board taken while said vessel was licensed to fish halibut in an open area unless such halibut shall be considered as taken under the issued permit and shall thereby be subject to forfeiture when landed if in excess of the proportion permitted in paragraph (a) of § 301.7.

(e) A permit shall not be issued to, or be valid if held by, any vessel which shall fish with other than set lines of the type commonly used in the Pacific Coast halibut fishery.

(f) The permit of any vessel shall not be valid unless the permit is granted before departure from port for each fishing operation for which statistical returns are required. This granting of a permit shall be by customs officers or by fishery officers of the Governments of Canada or the United States when available at places where there are no customs officers and shall not be made unless the area or areas in which the vessel will fish is entered on the halibut license form and unless the provisions of § 301.9 have been complied with for all landings and all fishing operations since issue of the license or permit, provided that if the master or operator of any vessel shall fail to comply with the provisions of § 301.9 of these regulations the permit of such vessel may be granted by customs or fishery officers upon evidence either that there has been a judicial determination of the offense or that the laws prescribing penalties therefor have been complied with, or that the said master or operator is no longer responsible for, nor sharing in, the operations of said vessel.

(g) The permit of any vessel shall not be valid if said vessel shall have in its possession at any time halibut in excess of the amount allowed under paragraph (a) of § 301.7.

(h) No person shall retain, land or sell any halibut caught incidentally to fishing for other species in any area closed to halibut fishing under § 301.2 or § 301.4, or shall have halibut of any origin in his possession during such fishing, unless such person is a member of the crew of and is upon a vessel with a halibut license and with a valid permit issued and in force in conformity with the provisions of §§ 301.7 and 301.8.

#### § 301.9 Statistical return by vessels.

(a) Statistical return as to the amount of halibut taken during fishing operations must be made by the master or operator of any vessel licensed under the regulations of this part and as to the amount of halibut and other species by the master or operator of any vessel operating under permit as provided for in §§ 301.7 and 301.8, within 96 hours of landing, sale or transfer of halibut or of first entry thereafter into a port where there is an officer authorized to receive such return.

(b) The statistical return must state the port of landing and the amount of each species taken within the area or areas defined in the regulations in this part, for which the vessel's license is validated for halibut fishing or within the area or areas for which the vessel's license is endorsed as a permit.

(c) The statistical return must include all halibut landed or transferred to other vessels and all halibut held in possession on board and must be full, true and correct in all respects herein required.

(d) The master or operator or any person engaged on shares in the operation of any vessel licensed or holding a permit under the regulations of this part may be required by the Commission or by any officer of the Governments of Canada or the United States authorized to receive such return to certify to its correctness to the best of his information and belief and to support the certificate by a sworn statement. Validation of a halibut license or issuance of a permit after such sworn return is made shall be provisional and shall not render the license or permit valid in case the return shall later be shown to be false or fraudulently made.

(e) The master or operator of any vessel holding a license or permit under the regulations in this part shall keep an accurate log of all fishing operations including therein date, locality, amount of gear used, and amount of halibut taken daily in each such locality. This log record shall be retained for a period of two years and shall be open to inspection by representatives of the Commission authorized for this purpose.

(f) The master, operator or any other person engaged on shares in the operation of any vessel licensed under these regulations may be required by the Commission or by any officer of the Governments of Canada or the United States to certify to the correctness of such log record to the best of his information and belief and to support the certificate by a sworn statement.

(g) The master or operator of any vessel holding a license validated for fishing in Area 3B North or in Area 3B North Triangle on entering Sand Point, Alaska enroute to another port to unload, must report to an authorized representative of the United States or of the Commission the estimated amount of halibut on board that was caught in each regulatory area.

#### § 301.10 Statistical return by dealers.

(a) All persons, firms or corporations that shall buy halibut or receive halibut for any purpose from fishing or transporting vessels or other carrier shall keep and on request furnish to customs officers or to any enforcing officer of the Governments of Canada or the United States or to representatives of the Commission, records of each purchase or receipt of halibut, showing date, locality, name of vessel, person, firm or corporation purchased or received from and the amount in pounds according to trade categories of the halibut and other species landed with the halibut.

(b) All persons, firms or corporations receiving fish from a vessel fishing under permit as provided in § 301.7 shall within 48 hours make to an authorized enforcement officer of the Governments of Canada or the United States a signed statistical return showing the date, locality,

name of vessel received from and the amount of halibut and of other species landed with the halibut and certifying that permission to receive such fish was secured in accordance with paragraph (c) of § 301.7. Such persons, firms or corporations may be required by any officer of the Governments of Canada or the United States to support the accuracy of the above signed statistical return with a sworn statement.

(c) All records of all persons, firms or corporations concerning the landing, purchase, receipt and sale of halibut and other species landed therewith shall be retained for a period of two years and shall be open at all times to inspection by any enforcement officer of the Governments of Canada or the United States or by any authorized representative of the Commission. Such persons, firms or corporations may be required to certify to the correctness of such records and to support the certificate by a sworn statement.

(d) The possession by any person, firm or corporation of halibut which such person, firm or corporation knows to have been taken by a vessel without a valid halibut license or a vessel without a permit when such license or permit is required, is prohibited.

(e) No person, firm or corporation shall unload any halibut from any vessel that has fished for halibut in Area 3B South or in Area 3B North or in Area 3B North Triangle after the closure of Area 3A unless the license of said vessel has been validated at Sand Point, Alaska as required in paragraphs (e) and (g) of § 301.6, and unless the vessel has complied with the provisions of § 301.16, or unless permission to unload such halibut has been secured from an enforcement officer of the Governments of Canada or the United States.

#### § 301.11 Dory gear prohibited.

The use of any hand gurdy or other appliance in hauling halibut gear by hand power in any dory or small boat operated from a vessel licensed under the provisions of these regulations is prohibited in all convention waters.

#### § 301.12 Retention of halibut taken by nets.

(a) It is prohibited to retain halibut taken with a net of any kind or to have in possession any halibut while fishing with any net or nets other than bait nets in any convention waters except in those waters of Area 3B North that are west of the meridian of 175° W. longitude and north of a line running from Cape Newenham, which cape is approximately latitude 58°39'00" N., longitude 162°10'25" W. to a point northeast of St. Paul Island, approximately latitude 57°15'00" N., longitude 170°00'00" W.; thence to a point of intersection with the meridian of 175° W. longitude at approximately 58°38'00" N. latitude. The position of Cape Newenham was determined from Chart 9103 published September 29, 1958 (3d Edition), revised April 30, 1962 by the United States Coast and Geodetic Survey.

(b) All vessels with any halibut on board except those fishing in or in transit to or in transit from the waters of Area 3B North described in paragraph (a) of this section are prohibited to use or possess any net or nets other than bait nets.

(c) The character and the use of bait nets referred to in paragraphs (a) and



(b) of this section shall conform to the laws and regulations of the country where they may be utilized and shall be of a type commonly used for such purposes and said bait nets shall be utilized for no other purpose than the capture of bait for use of the vessel carrying them.

#### § 301.13 Retention of tagged halibut.

Nothing contained in the regulations in this part shall prohibit any vessel at any time from retaining and landing any halibut which bears a Commission tag at the time of capture, provided that such halibut with the tag still attached is reported at the time of landing to representatives of the Commission or to enforcement officers of the Governments of Canada or the United States and is made available to them for examination.

#### § 301.14 Responsibility of master.

Wherever in the regulations of this part any duty is laid upon any vessel, it shall be the personal responsibility of the master or operator of said vessel to see that said duty is performed and he shall personally be responsible for the performance of said duty. This provision shall not be construed to relieve any member of the crew of any responsibility with which he would otherwise be chargeable.

#### § 301.15 Supervision of unloading and weighing.

The unloading and weighing of the halibut of any vessel licensed under the regulations in this part and the unloading and weighing of halibut and other species of any vessel holding a permit under the regulations in this part shall be under such supervision as the customs or other authorized officer may deem advisable in order to assure the fulfillment of the provisions of the regulations in this part.

#### § 301.16 Sealing of fishing equipment.

Any fishing vessel, prior to departing from Area 3B South into Area 3A with any halibut on board when Area 3A, as defined in § 301.1, is closed to halibut fishing, shall be equipped with approved attachments on the chute to permit the securing of a seal or seals, and prior to such departure shall request that said chute or the gurdy used for hauling gear or both chute and gurdy be sealed with such seal or seals as shall be required by any customs or fishery officer or any other duly authorized officer of the Government of the United States. The vessel shall keep such seal or seals intact until removed by a customs or fishery officer of the United States or of Canada and shall not unload any halibut until

such time as said officer removes the seal or seals and grants permission to unload.

#### § 301.17 Previous regulations superseded.

The regulations in this part shall supersede all previous regulations adopted pursuant to the Convention between Canada and the United States of America for the preservation of the halibut fishery of the Northern Pacific Ocean and Bering Sea, signed March 2, 1953, except as to offenses occurring prior to the approval of these regulations. The regulations in this part shall be effective as to each succeeding year, with the dates herein specified changed accordingly, until superseded by subsequently approved regulations. Any determination made by the Commission pursuant to these regulations shall become effective immediately.

WM. M. SPRULES,  
Chairman.  
H. A. DUNLOP,  
Secretary.  
HAROLD E. CROWTHER,  
Vice Chairman.  
WILLIAM A. BATES.  
HAROLD S. HELLAND.  
MATTHIAS MADSEN.  
RICHARD NELSON.

Approved: June 8, 1963.

JOHN F. KENNEDY.



## United States Circuit Court of Appeals

### FISHERMEN CONSIDERED EMPLOYEES FOR TAX PURPOSES:

The First Circuit Court of Appeals on December 6, 1963, upheld a ruling that fishing vessel crews and captains who operate under the "share" system are considered employees for Federal tax purposes. The ruling had been handed down April 9, 1963, by a Judge of the United States District Court in Portland, Maine. Two New England vessel owners had filed suit to recover a substantial amount of money paid out in Social Security and unemployment taxes over a period of three years. The owners claimed that they should not have had to pay the taxes on fishing vessel payrolls because the crewmen were not considered employees, but were independent contractors. The United States District Court Judge ruled that "the relationship which the parties (vessel owners and fishermen) intended to, and did in fact, establish, was an employment relationship within the meaning of the applicable statutes." The ruling however, applies only to those who are required by law to participate in tax programs

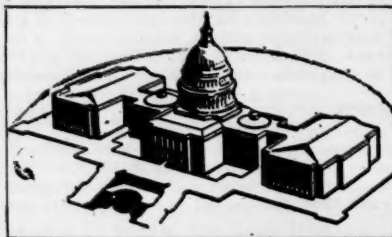
of the Federal Insurance Contributions Act and Federal Unemployment Tax Act.

Note: See Commercial Fisheries Review, July 1963 p. 107.



## Eighty-Eighth Congress (First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and



allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

**CONSERVATION OF MARINE FISHERIES RESOURCES:** On Nov. 22, 1963, Senator Bartlett inserted in the Congressional Record (page 21571) an address by Senator Gruening titled "Our Fisheries Need Greater and Firmer Support and a 12-Mile Limit," delivered to the 16th annual session of the Gulf and Caribbean Fisheries Institute held in Miami, Fla., Nov. 11, 1963.

**FISHERMEN'S FINANCIAL AID FOR ECONOMIC DISLOCATION:** H. R. 9408 (Blatnik) introduced in House Dec. 10, 1963, and S. 2411 (McCarthy et. al) introduced in Senate, Dec. 20, 1963, to authorize the Secretary of the Interior to make payments to reestablish the purchasing power of American fishermen suffering temporary economic dislocation; referred to House Committee on Merchant Marine and Fisheries and the Senate Committee on Commerce, respectively.

**FISHING INDUSTRY CLAIMS AGAINST THE U. S.:** H. R. 9298 (O'Konski) introduced in House Nov. 29, 1963, to confer jurisdiction in the U. S. district courts to hear, determine, and render judgment on the claims of certain commercial fishermen and fish processors against the United States; referred to the Committee on the Judiciary. The bill would confer jurisdiction on the Federal District Courts to litigate "claims of persons engaged in commercial fishing activities on the Great Lakes or in the processing for commercial sale of fish caught in the Great Lakes against the United States for damages to their business resulting from the news release concerning smoked fish issued by the Food and Drug Administration of the Department of Health, Education, and Welfare on October 25, 1963."

**FOOD-FOR-PEACE, AND FISH:** The President on Dec. 16, 1963, signed H. R. 7885, to amend further the Foreign Assistance Act of 1961, as amended, and for other purposes (P. L. 88-205). Included in this law is a provision for the inclusion of domestically produced fishery products under P. L. 480 (Sec. 403 (c)). This would amend section 106 of the Agricultural Trade Development and Assistance Act of 1954 (P. L. 480) to include in title I and title IV programs any domestically produced fishery product if the Secretary of the Interior determines that the product at the time of export is excess of domestic requirements, adequate carry-over, and anticipated exports for dollars. Fish flour will not be included until approved by the Food and Drug Administration. The amendment with respect to title I will not become effective until Jan. 1, 1965.

**FOOD AND FIBER COMMISSION:** S. J. Res. 134 (Humphrey), providing for the appointment of a bipartisan Commission to make a detailed study of food and fiber needs, introduced in Senate Nov. 20, 1963; referred to Committee on Agriculture and Forestry.

**FOREIGN ASSISTANCE ACT OF 1961 AMENDMENT:** On Nov. 21, 1963, conferees met in executive session to resolve the differences between the Senate and House-passed versions of H. R. 7885, authorizing funds to continue the foreign assistance program for fiscal year 1964, but did not reach final agreement.

**IMPORT COMMODITY LABELING:** The Senate on Dec. 16, 1963, and the House on Dec. 18, 1963, adopted the conference report (H. Rept. 1035) on H. R. 2513, to amend the Tariff Act of 1930 to require certain new packages of imported articles to be marked to indicate the country of origin, thus clearing the bill for the President's signature.

**INDIAN FISHING RIGHTS:** H. J. Res. 805 (Stinson) introduced in House Nov. 19, 1963. Provides that: "in accordance with and in furtherance of the purposes of any treaty with American Indians that secures to them a right to take fish at all usual and accustomed places in common with other citizens, the States involved are authorized to enact and to enforce laws of a purely regulatory nature concerning the time and manner of fishing outside an Indian reservation that are reasonably necessary for the conservation of fish, and that are equally applicable to Indians and all other citizens without distinction. State legislation enacted pursuant to this law is hereby declared to be in furtherance of and not in derogation of the treaties involved;" referred to the Committee on Interior and Insular Affairs.

**INTERNATIONAL NORTH PACIFIC FISHERIES PROBLEMS:** On November 20, 1963, Senator Magnuson inserted in the Congressional Record an article from a fisheries periodical commenting on the presence in July 1963 of a Soviet fishing vessel off the coast of Washington State (Appendix page A7186). The Senator also inserted a newspaper article titled, "International Fisheries: The Problems are Complex" (Appendix pages A7207-7208).

**NORTH PACIFIC FUR SEAL CONVENTION:** Protocol amending the interim Convention on Conservation of North Pacific Fur Seals, signed at Washington, October 8, 1963, on behalf of Canada, Japan, the U. S. S. R., and United States (Ex. O, 88th Congress, 1st Session). Received in the Senate on December 2, 1963, and referred to the Committee on Foreign Relations.

**OCEANOGRAPHY WORLD CONFERENCE:** H. J. Res. 877 (Fascell) introduced in House Dec. 17, 1963, providing for a world conference on oceanography to be convened in the United States in 1965; referred to Committee on Foreign Affairs. Representative Fascell on Dec. 18, 1963, extended his remarks in support of this resolution.

**PRICE-QUALITY STABILIZATION:** A special Subcommittee of the Senate Committee on Commerce continued hearings on S. 774, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution, and to confirm, define and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes. Hearings recessed subject to call.

**SCIENCE AND TECHNOLOGY OFFICE FOR CONGRESS:** On Nov. 21, 1963, Congressman Sibal spoke from the floor of the House on the background of H. R. 6866 which he stated was "designed to equip the legislative branch with tools it needs to meet the challenge of the new science. This bill would provide Congress with independent continuing advisory staffs of scientists and technologists." Congressman Sibal pointed out that public hearings on H. R. 6866 would be held Dec. 4, 1963, before the Subcommittee on Accounts of the House Administration Committee. (Congressional Record, page 21542.)

Speaking on the floor of the Senate on Nov. 22, 1963, Senator Bartlett called attention to the public hearings on H. R. 6866 and inserted in the Congressional Record (page 21569) an article from a periodical discussing the proposals to establish a Congressional Office of Science and Technology.

Rep. Widnall (New Jersey) on Dec. 17, 1963, spoke from the floor of the House in favor of H. R. 8066, to establish in the legislative branch of the Government the Congressional Office of Science and Technology. He also inserted an article from the *Providence Journal* of Dec. 11, 1963, concerning problems of the National Science Program.

**SMALL BUSINESS DISASTER LOANS:** On Nov. 21, 1963, the Senate passed S. 1309, to change the name of the Small Business Administration to the Federal Small Business Administration, and increase authorizations for loans therefor, as amended by committee amendment (in nature of a substitute), which had first been amended by adoption of Senator Hart's amendment to make eligible for disaster loans small business concerns that have suffered substantial economic injury through inability to process or market food products because of disease or poison therein occurring through natural or undetermined causes.

**STATE DEPARTMENT APPROPRIATIONS FY 1964:** The Senate on Dec. 12, 1963, passed with amendments H. R. 7063, making appropriations for the Departments of State, Justice, and Commerce, the Judiciary, and related agencies for the fiscal year ending June 30, 1964, and for other purposes. Included in the appropriations for the Department of State are funds for the international fisheries commissions. The Senate insisted on its amendments, asked for a conference and appointed as conferees Senators McClellan, Ellender, Magnuson, Holland, Fulbright, Smith, Saltonstall and Mundt. The bill passed the House on June 18, 1963.

The House and the Senate on Dec. 18, 1963, adopted the conference report (H. Rept. 1056) on H. R. 7063. The bill is now cleared for signature by the President.

**WATER RESOURCES COUNCIL:** The Senate Committee on Interior and Insular Affairs in executive session on Nov. 22, 1963, ordered favorably reported S. 1111 (amended), to establish a Water Resources Council to assist in the development of comprehensive water resources planning.

**WATER POLLUTION CONTROL ADMINISTRATION:** H. R. 9363 (Flood) introduced in House Dec. 5, 1963, to amend the Federal Water Pollution Act, as amended, to establish the Federal Water Pollution Control Administration, to increase grants for construction of municipal sewage treatment works, to provide financial assistance to municipalities and others for the separation of combined sewers, to authorize the issuance of regulations to aid in preventing, controlling, and abating pollution of interstate or navigable waters; referred to Committee on Public Works. Similar or identical to other bills previously introduced in House.

**WATER RESOURCES COUNCIL:** The Senate on Dec. 4, 1963, passed S. 1111 (amended), to establish a Water Resources Council to assist in the development of comprehensive water resources planning.

**VESSEL COLLISION LIABILITY:** The Merchant Marine and Fisheries Subcommittee of the Senate Committee on Commerce, Dec. 9, 1963, in executive session, approved for full Committee consideration S. 555, to establish principals for the apportionment of liability in cases of collision between vessels (amendment in the nature of a substitute bill).



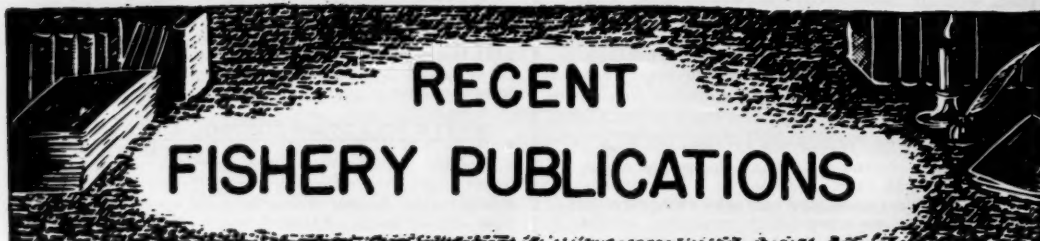
### COCONUT CRAB

An interesting statement regarding the coconut crab appeared in an article titled "The Quest for the Home of the Coconut," which appeared in the July 1963 issue of the periodical *South Pacific Bulletin*. The reference to the crab states:

Menon and Pandalai quote Child (1953) as citing an interesting biological association between the *Cocos* and the coconut robber crab (*Birgus latro*).

"These crabs live exclusively upon the meat of the coconut. They climb the palms, and, with powerful claws, nip off a nut. Descending then, the crab tears open the fallen nut and proceeds to feast upon the kernel. The crab inturnis considered a delicacy by native people. It is a nighttime marauder, but the native hunter is wily. Knowing that the crab descends backwards from the top of the palm, he ties twisted grass high up around the stems of palms likely to house crabs. When the descending robber's soft posterior touches the grass band, it believes, apparently, that it has touched ground and lets go. Crashing to earth, the crab lies disabled until collected by the hunter.

"This animal's association with the coconut palm is of such ancient standing that an analysis of its fat reveals a strong similarity to coconut oil and very little structural resemblance to animal fat..."



# RECENT FISHERY PUBLICATIONS

## FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C. 20240. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.  
FL - FISHERY LEAFLETS.  
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.  
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.  
SL - STATISTICAL LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.  
SSR. - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).  
WL - WILDLIFE LEAFLETS

- | Number   | Title  |
|----------|--|
| CFS-3279 | - Mississippi Landings, 1962 Annual Summary, 5 pp.                       |
| CFS-3283 | - Washington Landings, 1962 Annual Summary, 2 pp.                        |
| CFS-3288 | - New Jersey Landings, July 1963, 4 pp.                                  |
| CFS-3297 | - Maine Landings, July 1963, 4 pp.                                       |
| CFS-3298 | - Ohio Landings, June 1963, 3 pp.  |
| CFS-3303 | - Virginia Landings, June 1963, 4 pp.                                    |
| CFS-3304 | - Louisiana Landings, 1962 Annual Summary, 8 pp.                         |
| CFS-3305 | - Fish Meal and Oil, July 1963, 2 pp.                                    |
| CFS-3307 | - Gulf Coast Shrimp Data, May 1963, 24 pp.                               |
| CFS-3308 | - Texas Landings, March 1963, 3 pp.                                      |
| CFS-3310 | - Georgia Landings, August 1963, 3 pp.                                   |
| CFS-3311 | - Ohio Landings, July 1963, 3 pp.  |
| CFS-3312 | - Wisconsin Landings, July 1963, 2 pp.                                   |
| CFS-3314 | - North Carolina Landings, August 1963, 4 pp.                            |
| CFS-3315 | - Virginia Landings, July 1963, 4 pp.                                    |
| CFS-3317 | - South Carolina Landings, August 1963, 3 pp.                            |
| CFS-3319 | - Shrimp Landings, June 1963, 7 pp.                                      |
| CFS-3321 | - Michigan Landings, June 1963, 3 pp.                                    |
| CFS-3322 | - Rhode Island Landings, July 1963, 3 pp.                                |
| CFS-3323 | - Mississippi Landings, July 1963, 3 pp.                                 |
| CFS-3324 | - New Jersey Landings, August 1963, 3 pp.                                |
| CFS-3326 | - Fish Meal and Oil, August 1963, 2 pp.                                  |
| CFS-3327 | - New York Landings, August 1963, 4 pp.                                  |
| CFS-3328 | - California Landings, July 1963, 4 pp.                                  |
| CFS-3329 | - Gulf Coast Shrimp Data, June 1963, 24 pp.                              |
| CFS-3330 | - Wisconsin Landings, August 1963, 2 pp.                                 |
| CFS-3331 | - New England Fisheries, 1962 Annual Summary, 7 pp.                      |
| SL-40    | - Wholesale Dealers in Fishery Products, Oklahoma, 1962, 1 p. (Revised). |

Sep. No. 695 - An Electromechanical Fishing and Counting Fence Used in Ireland.

Sep. No. 696 - Scope Ratio-Depth Relationships for Beam Trawl, Shrimp Trawl and Otter Trawl.

Sep. No. 697 - Foreign Fisheries Briefs.

FL-457 - Soft-Egg Disease of Fishes, by Ken Wolf, 2 pp., September 1962.

SSR-Fish. No. 453 - Stream Catalog of Southeastern Alaska Regulatory District No. 2, edited by Russell F. Orrell and Edward Klinkhart, 317 pp., illus., April 1963.

WL-452 - Fur Catch in the United States, 1962, 4 pp., July 1963.

Farm Reservoir Fishes, Circular No. 131, 13 pp., printed.

Trident--A Long Range Report of the Bureau of Commercial Fisheries, Circular 149, 121 pp., illus., processed, September 1963. This report has two broad objectives: (1) to strengthen the industry and (2) to conserve the resource. These objectives will be attained through a vigorous application of the detailed 3-pronged plan of research, development, and services outlined in the body of this report. The first section of this report is "Action Now," a 13-point plan to deal immediately with the urgent problems of the industry. It is in this section that solutions, strongly stressing the development and services aspect of Trident, are proposed for problems which demand attention now and which will require continuing attention as the long range plan is fully implemented. The 13-point plan proposes that: (1) the fishing industry be provided with assistance comparable to that provided by the Government generally; (2) the tariff structure for fishery products be thoroughly reexamined and that modifications be proposed for any disparities that may be found in the classification of duties; (3) methods be developed to offset subsidies paid by foreign countries to producers who export fishery products to the United States; (4) a broader and more realistic fishing vessel construction subsidy law be enacted; (5) more emphasis be placed on the development of bilateral and multilateral international agreements in the management of high seas fishery resources; (6) more meetings be held and more information exchanged



between the U. S. industry and foreign fisheries having common problems; (7) the Government increase its efforts to develop and expand foreign markets for exportable fishery products; (8) provision be made to obtain more adequate information on fishery developments and markets in key foreign areas; (9) technical findings be more quickly disseminated and that the industry be more aggressive in the adoption of new developments and findings; (10) industry-Government efforts to develop quality standards for fishery products be accelerated; (11) joint market promotional and advertising campaigns by U. S. and foreign producers be encouraged to stimulate the consumption of fishery products throughout the world; (12) concerted action be taken to stimulate the development of research scientists to meet rapidly expanding research needs; (13) aggressive safety programs be expanded to decrease alarmingly high fishing vessel hull and protection and indemnity insurance, and thus reduce operating costs. The second section of Trident, "The Long Haul," attacks, primarily through research, the basic, deep-rooted problems of the industry and of the resources. The impact of "The Long Haul" will be felt more gradually than that of the "Action Now" program, but both approaches, necessary immediate action and long-term research, are essential to achieve the Bureau's long range objectives. In the second section plans are outlined that detail the searching, time consuming efforts that eventually will fill the many gaps in knowledge of living resources of the sea and their environment. Insufficient knowledge hampers our conservation of these resources and handicaps their full utilization. New methods of finding and catching fish, as well as handling, preserving, and transporting the catch, are needed. Impairment of natural habitat by man's activities has severely injured important inshore fisheries and needs more intensive study.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE FISHERY MARKET NEWS SERVICE, U. S. BUREAU OF COMMERCIAL FISHERIES, WYATT BLDG., SUITE 611, 777 14TH ST. NW., WASHINGTON, D. C. 20005.

Number Title  
MNL-63 - Annual Report on Egyptian Fisheries, 1962, 32 pp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

Annual Report for the Fiscal Year Ending June 30, 1963, 50 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, La Jolla, Calif.) Discusses laboratory activities; programs and projects; vessel operations; and the sardine fishery--population dynamics, length studies, spawning 1962, competition between sardine and anchovies; quantitative sampling; plankton volumes; plankton constituents; and plankton behavior studies. Also covers hake fecundity--material and methods, length-fecundity, weight-fecundity, and number of spawnings; sardine subpopulations; availability of food for sardine; sardine and anchovy behavior in laboratory; general physiology--time temperature study, herring study, starfish behavior substance, and adult sardine; nutrition--protein conversion, sea urchin, filter-feeding crustaceans, and uptake of soluble organic nutrients; rearing of pelagic fish; pelagic survey for resource evaluation; construction of new laboratory; and contract for construction of new research vessel.

(Baltimore) Monthly Summary--Fishery Products, July and August 1963, 8 pp. each. (Market News Service,

U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore, Md. 21202.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the months indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, September 1963, 18 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, October 1963, 9 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6317, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

Fishery Industrial Research, vol. 1, no. 1, April 1962, 177 pp., illus., printed. (Branch of Reports, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, 800 E St. NW., 2nd Floor, Washington, D. C. 20240.) This is the first issue of a new periodical which will be published irregularly and will present papers devoted to research in problems of the fishery industry. This issue contains "Economic Aspects of the Pacific Halibut Fishery," by James Crutchfield and Arnold Zellner. Under international regulation by the Canadian and United States Governments, the Pacific halibut fishery, which once faced depletion, has been restored to a high level of productivity. Although the stocks of halibut now are adequately protected, economic weaknesses in the fishery prompted this study. The report discusses the basic theory of the regulation, analyzes its economic effects, and presents the conclusions drawn from the analysis and their implications for public policy.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, September 1963, 12 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; Gulf menhaden landings and production of meal, solubles, and oil; and sponge sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, October 1963, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va. 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and

Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production for the month indicated.

New England Fisheries--Monthly Summary, October 1963, 23 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial-fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--September 1963, 19 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks; for the month indicated.

New York City's Wholesale Fishery Trade, 1962 (including Statistics and Marketing Trends), by T. J. Risoli, 44 pp., illus. (Fishery Market News Service, U. S. Bureau of Commercial Fisheries, 155 John St., New York, N. Y. 10038.) The first part of this annual summary discusses fishery products receipts and marketing trends in the salt-water section of New York's wholesale Fulton Fish Market during 1962. The second part covers marketing trends and receipts in the fresh-water fish market (Peck Slip Area) for 1962. The third section contains miscellaneous trends and developments: growth of a long-line fishery for swordfish; the planned production of specialty products from fresh-water fish; and estimated per capita consumption of fishery products in the New York City area. The fourth part presents a series of statistical tables giving receipts by species, states, or provinces, and methods of transportation, 1962, with comparisons; monthly summary of prices of selected frozen fishery products; and imports of fishery products entered at New York, 1962 and 1961.

Receipts and Prices of Fresh and Frozen Fishery Products at Chicago, 1962, by C. E. Cope, 57 pp., illus., processed, August 1963. (Market News Service, U. S. Fish and Wildlife Service, U. S. Customs House, 610 S. Canal St., Rm. 1014, Chicago, Ill. 60607.) In the analysis of receipts of fishery products receipts at Chicago, the author discusses the drop in 1962 fishery products receipts. He also discusses sources of receipts, progress in sea lamprey control, the marketing of breaded yellow perch, development of a new perch filleting machine, use of liquid nitrogen for quick-freezing fishery products, trawling in Lakes Erie and Michigan, Chicago imports of fishery products by St. Lawrence Seaway, and survey of canned tuna in brine by Japan-

nese. Also included is a table giving the names, classifications, and approximate weights of certain fishery products as used in the Chicago wholesale fresh-water fish market. The second section presents statistical data on fresh and frozen fishery products receipts at Chicago by species and by states and provinces of origin, states and provinces by species, species by months, states and provinces by months, totals by species, and totals by states and provinces. Receipts are tabulated by mode of transportation (truck, express, and freight). A table shows the monthly range of wholesale prices of some of the leading varieties of fresh-water fish species, frozen fillets, and other frozen fish and shellfish.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, October 1963, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of other-trawl vessels as reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

West Coast Mexican Shrimp Crossings, by Ports of Entry, 1951-1963, 7 pp., November 1963. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) Presents statistical tables showing data on monthly imports of Mexican shrimp through ports of entry of San Luis, Lukeville, Nogales, Calexico, and San Ysidro, January 1958-October 1963; and annual imports, 1951-1963.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20540.

Fish and Wildlife, Price List 21, 15 pp., printed, April 1963 (48th Edition). Contains a list of all fish and wildlife publications available from the Government Printing Office, together with order blanks for convenience in ordering publications.

## MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

### ANCHOVY:

The Influence of Available Food Resources on the Survival Potential of the Azov Anchovy, by P. I. Grudin, 4 pp., processed. (Translated from the Russian, Trudy Soveshchaniy, no. 13, 1961, pp. 454-456.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, Suffolk, England, 1963.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"Live-Box Experiments with Anchovetas, *Cetengraulis mysticus*, in the Gulf of Panama," by William H. Bayliff and Edward F. Klima, article, *Inter-American Tropical Tuna Commission Bulletin*, vol. VI, no. 8, 1962, pp. 335-446, illus., printed in Spanish and English. Inter-American Tropical Tuna Commission, La Jolla, Calif.

La Pesca de la Anchoveta--Estadística de Pesca y Esfuerzo en Abril, Mayo y Junio de 1962 (The Anchovy Fishery--Statistics of Fishing Effort in April, May, and June 1962), Informe No. 5, printed in Spanish. Instituto de Investigaciones de los Recursos Marinos, Callao, Peru, 1962.

#### AQUATIC SCIENCE:

An International Service for Retrieving Aquatic Science Literature, by S. B. Salla, J. S. O'Connor, and R. A. Shappy, Fisheries Biology Technical Paper No. 28, printed. Biology Branch, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1962.

#### ARGENTINA:

Produccion Pesquera de la Republica Argentina, 1962 (Fishery Production in the Republic of Argentina, 1962), 127 pp., illus., printed in Spanish. Departamento de Investigaciones Pesqueras, Direccion General de Pesca y Conservacion de la Fauna, Ministerio de Agricultura y Ganaderia, Brasil y Florencio Sanchez, Buenos Aires, Argentina.

#### AUSTRALIA:

Fishing Industry Act, 1956; Annual Report on the Operation of the Act, 1961/62, 8 pp., printed. Ministry for Primary Industry, Canberra, Australia, 1963.

#### BACTERIOLOGY:

A Preliminary Note on GAFFKAEMIA Investigations in England, by P. C. Wood, Special Meeting on Crustacea No. 31, 8 pp., illus., processed. International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark, 1962.

#### BASS:

The Kelp Bass (PARALABRAX CLATHRATUS) and Its Fishery, 1947-1958, by Parke H. Young, Fish Bulletin 122, 67 pp., illus., printed. Printing Division, Documents Section, California Department of Fish and Game, Sacramento 14, Calif., 1963.

#### BIOCHEMISTRY:

On Changes in the Myosin Fraction of Fish Muscle on Freezing, Cold-Storage, and Thawing, by O. E. Nikkila, Translation No. 5547, 4 pp., processed. (Translated from the Russian, *Kemia*, vol. IV, no. 12, 1957, pp. 3-7.) Commonwealth Scientific and Industrial Research Organization, 314 Albert St., East Melbourne C2, Australia, 1961.

"Observations on the Post-Mortem Biochemical Changes in Fish Muscle in Relation to Rigor Mortis," by N. Tomlinson and others, article, *Journal of the Fisheries Research Board of Canada*, vol. 18, 1961, pp. 321-336, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"On the Source of Free Ribose Formed Post-Mortem in the Muscle of Lingcod (*Ophiodon elongatus*)," by N. Tomlinson and V. M. Creelman, article, *Journal of the Fisheries Research Board of Canada*, vol. 17, 1960, pp. 603-606, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

#### BRAZIL:

Sudene, Boletim de Estudos de Pesca, vol. 2, no. 11, November 1962, 21 pp., processed in Portuguese. Departamento de Estudos Especiais, Divisao de Pesca, Superintendencia do Desenvolvimento do Nordeste, Edificio Juscelino Kubitschek, 12º Andar, Recife, Pernambuco, Brazil. Includes, among others, these articles: "Apreciacao Sumaria da Sitacao das Pescas Brasileiras" (Summary Appraisal of the Position of the Brazilian Fisheries); "Estudos de Biologia da Pesca de Lagostas" (Biological Studies of the Spiny Lobster Fishery); "Pesca do Xáneu na Bahia e sua Tradicao Historica" (Yellow Mackerel in Bahia and Its Life History), by Vicente Antao de Carvalho; "A Pesca Maritima em Pernambuco" (The Marine Fishery in Pernambuco); and "Completa Trinta Anos de Existencia o Servico de Piscicultura" (The Fish Culture Service Completes 30 Years of Existence).

Sudene, Boletim de Estudos de Pesca, vol. 3, no. 5, May 1963, 28 pp., processed in Portuguese. Departamento de Industrializacao, Divisao de Pesca, Superintendencia do Desenvolvimento do Nordeste, Edificio Juscelino Kubitschek, 12º Andar, Recife, Brazil. Includes, among others, articles on: "Consumo de Pescado no Nordeste" (Fish Consumption in the Northeast); "Estudo da Biologia e Pesca da Lagosta" (Biology and Fishery Study of the Spiny Lobster), by Gercilde de A. Borges; and "Pescaria do Atuneiro Kaiko Maru 12" (Fishing by the Tuna Vessel *Kaiko Maru 12*), by Silvio B. Morais.

Sudene, Boletim de Estudos de Pesca, vol. 3, no. 6, June 1963, 30 pp., illus., processed in Portuguese. Departamento de Industrializacao, Divisao de Pesca, Superintendencia do Desenvolvimento do Nordeste, Edificio Juscelino Kubitschek, 12º Andar, Recife, Brazil. Includes, among others, these articles: "Desenvolvimento da Producao Pesqueira Nordestina" (Development of Fishery Production in the Northeast); and "Biologia e Pesca da Lagosta" (Spiny Lobster Biology and Fishery), by Gercilde de A. Borges.

#### CALIFORNIA:

Statistical Report of Fresh, Canned, Cured and Manufactured Fishery Products for 1962, Circular No. 37, 15 pp., printed. Biostatistical Section, Marine Resources Operations, Sacramento, Calif., 1963.

#### CANADA:

A Brief Review of the Fisheries of Nova Scotia, by John W. Watt, 79 pp., processed. Fisheries Division, Department of Trade and Industry, Province of Nova Scotia, Halifax, Nova Scotia, Canada, May 1963. Discusses the birth and growth of the salt fish industry (1497-1895), decline of the salt fish industry (1886-1939), the transition from salt fish to fresh fish (1850-1939), and the fishing industry (1940-1963). The Nova Scotia Government created a

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Fisheries Division in 1943. Its first annual report outlined proposals that included: (1) reorganization of the Fishermen's Loan Board to provide funds for improved types of boats and vessels; (2) vocational training for fishermen; (3) large capital contributions for fish-freezing plants; and (4) financial assistance for small or "intermediate" ports or areas.

**Costs and Earnings of Selected Fishing Enterprises, Atlantic Provinces, 1961**, by John Proskie, Primary Industry Studies no. 1, vol. 11, 200 pp., illus., processed. Economics Service, Department of Fisheries of Canada, Ottawa, Canada, 1963. This is an annual progress report on a study of the economics of 140 primary fishing enterprises. The enterprises are grouped in 21 classes according to region and type and size of fishing craft and gear employed. In the first part, the findings for the 1961 season are compared with those available for earlier seasons. The second part includes detailed tables summarizing the fishing activities and financial results for the enterprises included in the 1961 phase of the study. The study in 1961 was extended to include for the first time a sample of Nova Scotia and New Brunswick gill-netters and a sample of Danish seiners in New Brunswick.

#### CARP:

"Carp Study," by R. J. Robel, article, *Utah Fish and Game*, vol. 19, no. 8, August 1963, pp. 20-21, illus., printed, single copy 25 cents. Utah State Department of Fish and Game, 1596 W. North Temple, Salt Lake City 16, Utah. In 1959, the Utah State Department of Fish and Game in cooperation with other agencies initiated a joint 3-year study to help determine the effect of carp on waterfowl food plant production. Results showed that carp adversely affect the production of sago pondweed. Even low populations of carp reduce the growth of this important waterfowl food plant.

#### CEYLON:

**Preliminary Bibliography of Fish and Fisheries in Ceylon**, IPFC Occasional Paper 1962/5, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Attit Rd., Bangkok, Thailand, 1962.

#### CLAMS:

**Serial Atlas of the Marine Environment--A Geographic Study of the Clam, SPISULA POLYNOMA (Stimpson)**, by J. Lockwood Chamberlin and Franklin Stearns, Folio 3, 18 pp., illus., printed, \$8. Serial Atlas of the Marine Environment, American Geographical Society, Broadway at 156th St., New York 32, N. Y., September 1963. A geographic study of a clam, designed to show how maps can be used to analyze the environmental factors which determine why marine animals live where they do. The clam, *Spisula polynoma*, is an edible though commercially unimportant species found in both the Atlantic and Pacific oceans. On specially prepared maps, the authors plot what is actually known about the geographical distributions of the clam and show how the two chief controlling factors--bottom temperatures and bottom sediments--determine where the clam lives. The basic importance of the study for scientists and, eventually, for commercial fisheries lies in the method of cartographic analysis developed by the study. The clam study forms Folio 3

of the Serial Atlas, which is being issued as a series of separate folios, each a complete study in itself of a physical, biological, chemical, or geological aspect of the ocean. The two earlier folios dealt with sea surface temperatures in the western North Atlantic and with temperatures at a depth of 200 meters throughout the North Atlantic.

#### CLUP:

"Zamorazivanie e Hranenie Salaki v Al'ginatom Zele" (Freezing and Storage of Clup in an Alginate Jelly), by G. C. Konokotin and L. I. Zuikova, article, *Rybnoe Khoziaistvo*, vol. 36, no. 10, 1960, pp. 67-70, illus., printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U. S. S. R. Clup, a fish peculiar to the Baltic Sea where it is caught on an industrial scale, has a short storage life. It can be stored only 24 hours under cooling. The authors developed an alginate jelly for the freezing and storage of clup for 12 months in cold rooms at -4° F. The solution for the preparation of the jelly is made up of 1.0 percent sodium alginate, 1.0 percent lactic acid and 0.05 percent of calcium chloride. This solution becomes solid at 34° F. and its pH is 3.5.

#### COLOMBIA:

**Establishing a Business in Colombia**, by Herbert A. Lindow, OBR 63-107, 16 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., August 1963. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Discusses investment opportunities, amount and type of U. S. investment, joint ventures, licensing and technical assistance, and rights of foreigners. Also covers entry and repatriation of capital and exchange rates, business organization, industrial property protection, labor legislation, taxation, and exports.

#### COMPOSITION:

**Status of Importance of Minor Elements in Food, Especially in Fish**, by J. Kuhnau, paper presented at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961, printed. University of Hamburg, Hamburg, Germany.

#### CONTAINERS:

**Etude de la Corrosion des Boites de Conserve par les Sardines a l'Huile (Study of Rusting of Cans of Sardines in Oil)**, by R. Meesemaecker and others, 19 pp., illus., processed in French. Federation des Industries de la Conserve au Maroc, 291 Bd. Mohammed V, Casablanca, Morocco, March 1963.

#### COOPERATIVES:

**Problems of Cooperation (A Discussion Group Guide)**, by Emory S. Bogardus, 102 pp., printed, 75 cents. The Cooperative League of the U. S. A., 343 Dearborn St., Chicago 4, Ill. The questions and the accompanying materials will enable discussion groups to follow a systematic plan in considering the problems and the accompanying activities of a cooperative. Each cooperative will have problems peculiar to itself. Yet basic to these problems are certain essentials of efficient cooperative procedure. These are emphasized throughout this booklet as a background for stimulating worthwhile discussions. This study guide will be found useful for members of all types of cooperatives--consumer cooperatives, farm



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supply cooperatives, producer and marketing cooperatives, and all those that deal in services of one kind or another.

#### CORALS:

Corals (New Genera and Genotypes), by E. D. Soshkina, 18 pp., processed. (Translated from the Russian, *Trudy Paleontologicheskogo Instituta*, vol. LVI, 1955, pp. 118-128.) Paleontology and Stratigraphy Branch, U. S. Geological Survey, Washington, D. C., September 1960.

#### CRABS:

"Transport of Common Crab (*Scylla serrata*) in Living Condition," by R. B. Vasudeo and H. G. Kewalramani, article, *Indian Journal of Fisheries*, vol. 7, no. 1, pp. 169-173, illus., printed. Indian Journal of Fisheries, Ministry of Food and Agriculture, New Delhi, India.

The following publications, presented at a Special Meeting on Crustacea held in 1962, are available from the International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark:

Observations on Growth of the Edible Crab (CANCER PAGURUS), by E. Edwards, Special Meeting on Crustacea No. 15, 19 pp., illus., processed.

Yield Assessment in the Norfolk Fishery for Crabs (CANCER PAGURUS), by D. A. Hancock, Special Meeting on Crustacea No. 27, 19 pp., illus., processed.

The Possible Use of Fish Meal as a Bait for Catching Crabs, by James Mason, Special Meeting on Crustacea No. 19, 2 pp., processed.

The Scottish Crab-Tagging Experiments, 1960-61, by James Mason, Special Shellfish Symposium No. 18, 18 pp., illus., processed.

#### DIRECTORIES:

Fisheries Year-Book and Directory, 1963, illus., printed, 30 s. (about US\$4.20). British-Continental Trade Press, Ltd., 222 Strand, London, England. Gives details and statistics of the turnover of fresh, frozen, cured, and canned fish, fish meal, and oil. A chapter on the construction and equipment of fishing vessels describes features of interesting new vessels built in 1962, and lists the vessels built or under construction. The reference section includes a dictionary of fish names in eight languages; a fish supply calendar; a list of the fishery organizations throughout the world; and a world directory giving the particulars of over 5,000 firms in 68 countries, including fishing companies, wholesalers, importers, canners, firms dealing in fish byproducts, suppliers of machinery, equipment and packing materials, cold storage and transport firms; a list of trade marks; and a classified guide for buyers. Special features include a progress report on the work in the preservation of fish at the Torrey Research Station; recommended recipes; a review of current developments in the fish meal industry; and a detailed description of a Russian floating fish cannery.

Marine Digest Pacific Northwest Maritime Directory and World-Wide Shipping Guide, 1963, 393 pp., illus., printed, \$2. Marine Digest Publishing Company, 79 Columbia St., Seattle 4, Wash. The worldwide shipping guide of steamship services from Washington, Oregon, and British Columbia areas lists ports alphabetically in the region of the world where they are situated. Under each port are the lines that maintain a service into that port from the Pacific Northwest. In the directory, key personnel of leading companies are cross-indexed. Also includes a marine buyers' guide which lists alphabetically a number of products and services.

World Directory of Hydrobiological and Fisheries Institutions, edited by Robert W. Hiatt, 320 pp., printed. American Institute of Biological Sciences, 2000 P St. NW., Washington, D. C., 1963.

#### DOGFISH:

"Norske Pigghamerkniger 1962" (Norwegian Spiny Dogfish Tagging, 1962), by Olav Aasen, article, *Fiskets Gang*, vol. 49, no. 31, August 1, 1963, pp. 455-460, illus., printed in Norwegian with English summary. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

#### EELS:

Some Data on Eel Culture in Japan, IPFC Occasional Paper 1962/6, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1962.

#### FEEDS:

"Choice Sea Food for Farm Animals," by Clarence F. Winchester, article, *Feedstuffs*, July 6, 1963, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

#### FISH COOKERY:

Cuisson a la Vapeur sous Pression de la Sardine et du Thon (Cooking with Steam under Pressure of Sardines and Tuna), by R. Meesemaecker and Y. Sohler, 10 pp., illus., printed in French. (Reprinted from *Revue de la Conserve*, April 1963.) Societe d'Edition pour l'Alimentation, 1 Rue de la Reale, Paris 1, France.

#### FISHERIES ADMINISTRATION:

Planning for Fisheries Development and Fisheries Administration, IPFC Occasional Paper 1963/5, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1963.

#### FISHERY RESEARCH:

Research in Fisheries, 1962, Contribution No. 147, 70 pp., illus., printed. Fisheries Research Institute, University of Washington, Seattle 5, Wash., March 1963. Presents papers on Alaska salmon studies, other fish projects, ecology and taxonomy, shellfish, food science, and related subjects.

#### FISH MEAL:

Capacidad de Produccion de la Industria de Harina de Pescado en el Peru (Production Capacity of the Fish Meal Industry in Peru), by I. Tilic, Informe No. 4, printed in Spanish. Instituto de Investigaciones de los Recursos Marinos, Callao, Peru, 1962.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Nuevo Embalaje para Proteccion y Conservacion Eficientes de la Calidad de la Harina de Anchoveta (New Packaging for the Efficient Protection and Preservation of the Quality of Anchovy Meal), by E. Arnesen and others, Informe No. 6, printed in Spanish. Instituto de Investigaciones de los Recursos Marinos, Callao, Peru, 1962.

La Ubicacion de la Industria Peruana de Harina de Pescado (The Position of the Peruvian Fish Meal Industry), by I. Tilic, Informe No. 3, printed in Spanish. Instituto de Investigaciones de los Recursos Marinos, Callao, Peru, 1962.

#### FISH OIL:

Fish Oils in Relation to Blood Cholesterol and Cardiovascular Diseases, by H. Dam and E. Lund, paper presented at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961, printed. Polytechnic Institute, Copenhagen, Denmark.

#### FISH POPULATIONS:

Four Articles on the Management of Fisheries and Dynamics of Fish Populations, OTS 63-22056, 46 pp., processed. (Translated from the Russian, Ichthyology Commission Conferences Proceedings, no. 13, 1961.)

#### FISH PROTEIN CONCENTRATE:

Effect of Several Processing Variables on the Protein Content and Quality of Fish Flour, by C. H. Kurtzman and others, paper presented at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961, printed. Food and Flavor Laboratory, Arthur D. Little, Inc., Cambridge, Mass.

#### FOOD AND AGRICULTURE ORGANIZATION:

Current Bibliography for Aquatic Sciences and Fisheries, by L. Otto, processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1962.

Directorio de Servicios e Instituciones de Pesca en America Latina, Provisional (Directory of Fishery Services and Institutions in Latin America, Provisional), printed in Spanish. Regional Fisheries Officer, Oficina Regional de la FAO, Casilla 10095, Santiago, Chile, 1962.

Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species, La Jolla, California, 2-14 July 1962, Vol. I--Report, Fisheries Report No. 6, printed. Technical Writer's Unit, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1963.

Provisional Directory of Fisheries Institutions in Africa, printed. Regional Fisheries Officer, FAO Regional Office for Africa, P. O. Box 1628, Accra, Ghana, 1962.

Report on the FAO/IPFC Regional Training Center on Fish Processing Technology. Part I--Organization of the Training Center; Part II--Country Surveys on Fish Utilization in the Indo-Pacific Region, edited by R. Kreuzer, Fisheries Report No. 4,

printed. Technical Writer's Unit, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1962.

The Food and Agriculture Organization has published a report describing that Agency's activities under the Expanded Program for Technical Assistance for developing the fisheries of many countries. These reports have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Rapport au Gouvernement de la Republique du Viet-Nam sur l'Organisation et le Fonctionnement d'un Centre de Perfectionnement pour les Pecheurs (Report to the Government of Viet-Nam on the Organization and Operation of a Center for the Improvement of Fishing Vessels), FAO/EPTA Report No. 1494, 22 pp., illus., processed in French, 1962.

#### FOOD MANAGEMENT:

Good Receiving Practices, by Charles E. Eshbach, Food Management Program Folder No. 1, 6 pp., illus., printed. Cooperative Extension Service, College of Agriculture, University of Massachusetts, Amherst, Mass. Discusses a four-step receiving program for receiving clerks. The program includes: checking--weight, count, quality of each item received; recording--price, count, weight, and deficiencies; storing--immediately, in the proper places, and at correct temperature; and reporting all items that do not meet standards. Following this program insures efficient receiving, reduces losses, holds down costs, and results in a more successful food service operation. Although this leaflet does not refer to fishery products specifically, it applies to them as well as to other types of foods.

#### FREEZE-DRYING:

Freeze-Drying of Foods, a List of Selected References, compiled by Geraldine A. Corridon, Library List No. 77, 83 pp., processed. National Agricultural Library, U. S. Department of Agriculture, Washington, D. C., 20250, July 1963. This bibliography has been compiled as an early step in the economic appraisal of freeze-drying. It covers the period from January 1954 through August 1962, with a few earlier citations and some representative current references indicating the nature and trend of recent development. Although emphasis throughout is on food, some material on general basic principles and historical development has been included.

#### FRESH FISH:

"Pre-Packing Unfrozen Fish", by J. M. Shewan and G. Hobbs, Torrey Memoir No. 132, 3 pp., illus., printed. (Reprinted from Fishing News International, January 1963.) Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London EC4, England.

#### FROZEN FOOD:

Electronic Frozen Food Thawing, 12 pp., processed. Radyne Ltd., Eastheath Ave., Wokingham, Berkshire, England.

#### GEAR:

The Efficiency of the Gourdon Crab Creel, by James Mason, Special Meeting on Crustacea No. 12, 5 pp.,

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illus., processed. International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark, 1962.

"Problems in the Use of Plastics in Fishing," by J. H. White, A. Abramov, and B. Komarovskiy, Technical Paper No. 41, 2 pp., printed. (Reprinted from General Fisheries Council for the Mediterranean, Proceedings and Technical Papers, No. 6, 1961, pp. 283-284.) General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

"The Use of Machine-Made Net Webbing for Mediterranean Trawl Nets," by M. Ben-Yami, Technical Paper No. 13, 5 pp., illus., printed in English with French abstract. (Reprinted from General Fisheries Council for the Mediterranean, Proceedings and Technical Papers, No. 6, 1961, pp. 131-135.) General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

#### GREAT LAKES:

(Great Lakes Fishery Commission) Annual Report for the Year 1961, 59 pp., printed. Great Lakes Fishery Commission, Natural Resources Bldg., the University of Michigan, Ann Arbor, Mich. Presents sections on the 1961 annual meeting proceedings; administrative report for 1961; lamprey control and research in Canada, the United States, and by cooperating agencies; lake trout rehabilitation and assessment; and a summary of fishery research in the Great Lakes in 1961.

#### HERRING:

"Chemical Studies on the Herring (*Clupea harengus*). I--Trimethylamine Oxide and Volatile Amines in Fresh, Spoiling and Cooked Herring Flesh," by R. B. Hughes, article, *Journal of the Science of Food and Agriculture*, vol. 10, 1959, pp. 431-436, illus., printed. The Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

Herring Industry Board. Twenty-Eighth Annual Report, 1962, 50 pp., printed. Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1963.

#### HILSA:

Synopsis of Biological Data on Hilsa, *HILSA ILISHA* (Hamilton) 1822, by S. R. Pillay and H. Rosa, Jr., FAO Fisheries Biology Synopsis No. 25, 69 pp., illus., processed. Biology Branch, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, January 1963.

#### HOGFISH:

"Color Pattern Changes during Growth of *Bodianus pulchellus* and *B. rufus* (Pisces: Labridae)," by Henry A. Feddern, Contribution No. 469, 18 pp., illus., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 13, no. 2, June 1963, pp. 224-241.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

#### INDONESIA:

Preliminary Bibliography of Fish and Fisheries in Indonesia, IPFC Occasional Paper 1962/4, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1962.

#### INLAND FISHERIES:

European Inland Fisheries Advisory Commission, Report, Second Session, Paris, France, 12 May 1962, printed in French and English. European Inland Fisheries Advisory Commission, c/o Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

A Provisional List of Inland Fishery Workers in Europe, Fisheries Biology Technical Paper No. 15, printed. Biology Branch, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

#### JAPAN:

A Brief Note on the Fisheries Extension Service in Japan, IPFC Occasional Paper 1963/1, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1963.

Coastal Sea Fishery, by C. Miyazaki, 381 pp., illus., printed in Japanese, 850 Yen (about US\$2.36). Fishery Methods Section, Tokai Fisheries Laboratory, Fishery Agency, Tsukishima, Chuo-Ku, Tokyo, Japan. Describes the types of gear and fishing methods used in the coastal fishery of Japan.

#### KING CRAB:

The following publications, presented at a Special Meeting on Crustacea held in 1962, are available from the International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark:

On the Introduction of the Commercial Crab, *PARALITHODES CAMSCHATICA* (Tilesius), into the Barents Sea, by Ju. I. Orlov and A. F. Karpevich, Special Meeting in Crustacea No. 34, 3 pp., processed.

Preliminary Report of the Effect of Varying Levels of Fishing on Eastern Bering Sea King Crabs, *PARALITHODES CAMSCHATICA* (Tilesius), by Takashi Miyahara and Herbert H. Shippen, Special Meeting on Crustacea No. 38, 26 pp., illus., processed.

#### LABOR LEGISLATION:

Provisions of the Fair Labor Standards Act Applicable to Fishing and Operations on Aquatic Products under the Fair Labor Standards Act of 1938, as Amended (Text of the Code up to and including January 1, 1962, and any Federal Register Amendments Issued Thereafter, up to and including January 31, 1963), 29 pp., printed, 1963. Wage and Hour and Public Contracts Divisions, U. S. Department of Labor, Washington, D. C. 20210. Purpose of this bulletin is to provide an official statement of the views of the Department of Labor with respect to the application and meaning of those provisions of the Fair Labor Standards Act which govern rights and obligations of employees and employers in the various enterprises engaged

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in fishing and related activities and in operations on aquatic products. The application of the Act to employment in such enterprises was broadened by amendments effective September 3, 1961. Under the amended Act, a substantial number of employees working in the processing (except canning), marketing, freezing, curing, storing, packing for shipment, or distributing of fish, shellfish, or other aquatic forms of animal or vegetable life and their byproducts will be subject to its minimum wage provisions for the first time. Also, certain employers engaged in some of these activities have employees who are newly subject to the Act under the amendments extending coverage to employees employed in specified enterprises engaged in commerce or in the production of goods for commerce. An exemption from minimum wages as well as overtime pay has been extended by the 1961 amendments to certain employees working in canning of marine products at sea. The bulletin's objective is to make available in one place, for the information of those who may be concerned with these and related provisions of the law, the official interpretations of such provisions by which the Department of Labor will be guided in carrying out its responsibilities under the Act.

#### LAKE ERIE:

The Lake Erie Fishing Industry; Report Dealing with Representations Made to the Provincial Government in 1962, 34 pp., printed. Department of Economics and Development, Toronto, Ontario, Canada, 1963.

#### LOBSTERS:

Freezing Whole Scampi Tails, by J. C. Early, Torry Research Report No. 5, 3 pp., illus., processed. Torry Research Station, 135 Abbey Rd., Aberdeen, Scotland.

"Phyllosoma Larvae Associated with Medusae," by Len R. Thomas, Collected Reprint 506, 1 p., printed. (Reprinted from *Nature*, vol. 198, no. 4876, April 13, 1963, p. 208.) Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Cronulla, Sydney, Australia.

The following publications presented at a Special Meeting on Crustacea held in 1962, are available from the International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark:

Les Apports de Langoustines dans les Ports Belges (The Stocks of Lobsters in Belgian Ports), by E. Leloup and Ch. Gilis, Special Meeting on Crustacea No. 2, 3 pp., processed in French.

A Comparison of the Catch of Norway Lobsters Using Trawls of 50 and 70 mm. Respectively, by H. J. Thomas, Special Meeting on Crustacea No. 21, 4 pp., illus., processed.

The Distribution of the Norway Lobster around Scotland and the Stock Composition of the Norway Lobster in Areas of Different Fishing Intensity, by H. J. Thomas, Special Shellfish Symposium No. 16, 17 pp., illus., processed.

The German Nephrops Fishery, by E. Aker and K. Tlews, Special Meeting on Crustacea No. 4, 3 pp., illus., processed.

The Growth of Norway Lobsters in Aquaria, by H. J. Thomas, Special Meeting on Crustacea No. 23, 8 pp., illus., processed.

Lobster Conservation in Canada, by D. G. Wilder, Special Meeting on Crustacea No. 10, 8 pp., illus., printed.

The Lobster Fishery of the South-East Scottish Coast, by H. J. Thomas, Special Meeting on Crustacea No. 22, 9 pp., illus., processed.

Nephrops Norvegicus Fishing Grounds around the Irish Sea, by C. O'Riordan, Special Meeting on Crustacea No. 11, 4 pp., processed.

The Nephrops in the Skagerak and Kattegat (Length, Growth, Tagging Experiments and Changes in Stock and Fishery Yield), by Aage J. C. Jensen, Special Meeting on Crustacea No. 36, 6 pp., illus., processed.

Observations sur le Stock de Langoustines (NEPHROPS NORVEGICUS L.) du Golfe de Gascogne à l'Ecosse (Observations on the Stock of Lobsters (Nephrops norvegicus L.) in the Gulf of Gascony and Scotland), by L. Faure, Special Meeting on Crustacea No. 6, 5 pp., illus., processed in French.

A Preliminary Report on the Norway Lobster (NEPHROPS NORVEGICUS) in Icelandic Waters, by A. Sigurdsson, Special Meeting on Crustacea No. 32, 5 pp., illus., processed.

Pre-Moult Changes in Structure of the Integument of the Lobster, HOMARUS VULGARIS, by B. T. Hepper, Special Meeting on Crustacea No. 13, 12 pp., illus., processed.

Selection by Trawl Nets in the Nephrops Fishery, by H. A. Cole and A. C. Simpson, Special Meeting on Crustacea No. 25, 2 pp., illus., processed.

Selectivité des Chaluts à Langoustines (NEPHROPS NORVEGICUS L.) (Selectivity of Trawls for Lobsters (Nephrops norvegicus L.)), by J. Ancellin, Special Meeting on Crustacea No. 7, 1 p., processed in French.

The Size Distribution of Nephrops Populations on Grounds around the British Coasts, by H. A. Cole, Special Meeting on Crustacea No. 24, 13 pp., illus., processed.

A Summary of Scottish Comparative Fishing Experiments on NEPHROPS NORVEGICUS, by J. A. Pope and H. J. Thomas, Special Shellfish Symposium No. 17, 19 pp., illus., processed.

Variations in the Catches of NEPHROPS NORVEGICUS at Different Times of Day and Night, by A. C. Simpson, Special Meeting on Crustacea No. 26, 5 pp., illus., processed.

#### MACKEREL:

Larvae of Mackerel-Like Fish (Pisces, Scombriformes) from the Indian Ocean, by N. N. Gorbunova, OTS 63-22088, 35 pp., processed. (Translated from the Russian, Proceedings of the Institute of Oceanography, 1963.) Office of Technical Services, U.S.



THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Department of Commerce, Bldg. T-30, Ohio Dr. and Independence Ave. SW., Washington, D. C.

#### MARINE ALGAE:

Some Marine Algae from Ceylon--1, by M. Durairatnam, Bulletin No. 15, 14 pp., printed. Fisheries Research Station, Department of Fisheries, Colombo, Ceylon, 1962.

#### MARINE BIOLOGY:

Aspects of Deep Sea Biology, by N. B. Marshall, 378 pp., illus., printed. Philosophical Library, 15 E. 40th St., New York 16, N. Y., 1954.

United States Antarctic Research Program, National Science Foundation, 35 pp., illus., printed. National Science Foundation, Washington, D. C., 20550, May 1963. The United States is one of 12 nations participating in a cooperative scientific effort to learn more about a little-known area that covers almost 7 percent of our globe. Antarctica is a vast natural laboratory affording a relatively simple and uncontaminated environment for the study of phenomena that have direct bearing on many similar and analogous phenomena throughout the rest of the world. Marine biology in the rich Antarctic seas is of particular interest in view of the need to develop additional food resources for an expanding world population, and also because of the low level of radioactive contamination in southern oceans. Studies are being made of the vertebrate and invertebrate fauna, plankton communities, microbiological organisms, and the productivity of the waters. Adequate collections of specimens and water samples and their systematic description are requisites to these studies.

#### MARINE BORERS:

"Some Aspects of Marine Borer Problems in India," by N. B. Nair, article, Journal of Scientific and Industrial Research, India, vol. 20A, no. 10, 1961, pp. 584-591, printed. Council of Scientific and Industrial Research, Old Mill Rd., New Delhi 2, India.

#### MARKETING:

Rules and Specifications Applicable to Futures Trading in Frozen Shrimp for January, March and September 1964 Delivery, 8 pp., printed. Chicago Mercantile Exchange, 110 N. Franklin St., Chicago 6, Ill. Explains shrimp classification and grade, trading unit on futures call, futures price fluctuations and limits, deliveries and substitutions on the futures call, and permissible substitutions in sizes of shrimp. Also discusses inspection certificates, life of inspection certificate, storage charges on futures, speculative position limit, commission charges, and warehouses approved for shrimp deliveries. Included are statistical tables showing monthly ex-vessel headless shrimp prices at Port Isabel and Brownsville, Texas, for 1960-1962, and January-August 1963; Texas shrimp landings, 1961-1962, and January-August 1963; and United States frozen shrimp cold storage stocks, 1959-1962, and January-October 1963.

#### MOROCCO:

Foreign Trade Regulations of Morocco, OBR 63-110, 8 pp., processed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Wash-

ington, D. C., July 1963. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Discusses trade policy, import tariff system, sales and other internal taxes, documentation and fees, and labeling and marking requirements. Also covers special customs provisions, nontariff import trade controls, Morocco's export controls, United States controls, and Government representation in the United States. A special tax is levied on industrial fish.

#### NEW ZEALAND:

"The Supra-Littoral Fringe of New Zealand Sand Beaches," by R. J. MacIntyre, 15 pp., illus., printed. (Reprinted from Transactions of the Royal Society of New Zealand, General, vol. 1, no. 8, August 8, 1963, pp. 89-103.) Royal Society of New Zealand, c/o Victoria University of Wellington, P. O. Box 196, Wellington, New Zealand.

#### OCEANOGRAPHY:

Australian Tide Recorders, by B. V. Hamon, Technical Paper No. 15, 33 pp., illus., printed, 1963. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Cronulla, Sydney, Australia.

Considerations on Fishery Oceanography, by Z. Popovici, Fisheries Biology Technical Paper No. 29, printed. Biology Branch, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1963.

Coordination of Federal Oceanography, by Robert Walden Coggeshall, Bulletin 8, printed, \$2.50. Center for Technology and Administration, the American University, 1901 F St. NW., Washington 6, D. C. Documents the current history of the search for appropriate and effective means to coordinate Federal oceanography.

International Marine Science, vol. 1, no. 1, April 1963, printed. Fisheries Biology Branch, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. The first issue of a new quarterly publication devoted to oceanography, prepared jointly by UNESCO and FAO. Includes editorial notes; international, regional, and national organizations including their purposes, functions, and structures; national oceanographic programs; international projects; meetings; training facilities, including seminars, available fellowships; miscellaneous news items; and activities of the UN and other agencies.

Man and the Sea, by Dan Q. Posin, 127 pp., illus., printed, \$2.95. Lyons (Meredith), 2500 Prairie Ave., Chicago 16, Ill., 1963.

Oceanographic Observations in the Intertropical Region of the World Ocean during IGY and IGC. Part IIa--Pacific Ocean (France, Japan and Union of Soviet Socialist Republics), IGY Oceanographic Report Number 3, 232 pp., illus., processed. Department of Oceanography and Meteorology, Agricultural and Mechanical College of Texas, College Station, Tex., September 1961.

Oceanography, the Ten Years Ahead--A Long Range National Oceanographic Plan, 1963-1972, IGO Pam-

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phlet No. 10, 64 pp., illus., printed. Interagency Committee on Oceanography, Federal Council for Science and Technology, Office of Naval Research, Rm. 1818, 17th St. and Constitution Ave. NW., Washington, D. C., 20360, June 1963. Discusses why a long-range plan is needed, for whom it is written, and what this plan is supposed to do; national goals in oceanography--strengthening basic science, improving national defense, managing resources in the world ocean, managing resources in domestic waters, protecting life and property ashore and insuring the safety of operations at sea; and special groups concerned with oceanography--oceanographic science, the fishing industry, offshore oil industry, the sea-mining industry, shipping, and recreation industry. Also covers capabilities and systems to support oceanographic goals--strengthening basic science, defense, world ocean resources, safety at sea and protection ashore, services, instrumentation, and manpower; surveys and services--ocean survey plan, the National Oceanographic Data Center, Navy's Oceanographic Instrumentation Center, and Oceanographic forecasting service; the international setting--U. S. S. R., Japan, United Kingdom, and Canada; program summary and evaluation; and organizational problems.

Osnovy Uchenia o Rezviti Morskikh Beregov (Fundamentals of the Science of the Development of Sea Shores), by V. P. Zenkovich, 710 pp., illus., printed in Russian. Academy of Sciences of the U. S. S. R., Moscow, U. S. S. R., 1962. Discusses basic ideas on the hydrodynamics of the coastal zone, sea deposits and their transverse displacement, the abrasion process and factors determining it, profiles of underwater slope in natural conditions, above-water elements of the shore zone, and transport of deposits along the shore. Also covers accumulative forms of shore zones, bay shores and their evolution, phases of shore evening, the development of shores by vertical movements, the effect of rivers and fluvial deposits on the development of the sea-shore, eolian processes on seashores, shore formations caused by tides and storm convergencies, and some tasks of further research.

--Milan A. Kevanja

Standard Encyclopedia of the World's Oceans and Islands, edited by Anthony Huxley, 383 pp., illus., printed, \$10.95. G. P. Putnam's Sons, 210 Madison Ave., New York 16, N. Y., 1962.

#### OTTER TRAWLS:

"O Vyborie Ratzional'noy Formy Tralovoy Doski" (Choosing Rational Shape of Otter Boards), by I. R. Matrosov, article, *Rybnoe Khoziaistvo*, vol. 34, no. 1, 1958, pp. 36-42, illus., printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U. S. S. R.

#### OYSTERS:

Bibliography on Pearl Oysters, by S. Sivalingam, Bulletin No. 13, 18 pp., printed. Fisheries Research Station, Department of Fisheries, Colombo, Ceylon, 1962.

The California Oyster Industry, by Elinore M. Barrett, Fish Bulletin 132, 103 pp., illus., printed. Printing Division, Documents Section, California

Department of Fish and Game, Sacramento, Calif., 1963. California was the leading Pacific coast oyster producer during the latter half of the 19th century. After the decline early in this century of the San Francisco Bay oyster industry based on young oysters imported from the East Coast, the California industry had a marginal existence until a major revival of the industry in the mid-1950's. At that time, large-scale plantings of young oysters imported from Japan raised California oyster production to a level similar to that achieved in the late 19th century. By volume, California in 1958 was second ranking oyster producer on the Pacific coast, and seventh among all United States oyster-producing states.

#### PESTICIDES:

"Insecticides: Effects on Cutthroat Trout of Repeated Exposure to DDT," by Don Allison and others, article, *Science*, vol. 142, no. 3594, November 15, 1963, pp. 958-961, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

"Pesticide Fish Kills," article, *Outdoor California*, vol. 24, no. 9, September 1963, pp. 3-4, illus., printed. California Department of Fish and Game, 722 Capitol Mall, Sacramento, Calif.

#### PHYSIOLOGY:

Ekologicheskaya Fiziologiya Ryb. Tom I (Ecological Physiology of Fishes, Part I), by N. S. Stroganov, 444 pp., printed in Russian. Izdatel'stvo Moskovskogo Universiteta, Moscow, U. S. S. R., 1962. This book is the collection of lectures held by Prof. Stroganov since 1937 at the Chair of Hydrobiology of the Biological Faculty of Moscow State University, first under the title *Physiology of Fishes* and since 1949 as *Ecological Physiology of Fishes*. The term is defined by Prof. Stroganov as that part of physiology which studies the laws of physiological processes in an organism and their dependence on environmental conditions. The book is divided into 9 chapters as follows: (1) chemical composition of the fish body; (2) skin cover; (3) blood; (4) blood circulation; (5) breathing; (6) interchange of gases; (7) feeding; (8) assimilation and dissimilation; and (9) reproduction. An exhaustive bibliography follows each chapter citing references to works in Russian, English, German, French, Japanese, and other languages.

--Milan A. Kevanja

#### PLANKTON:

"Comparison of Zooplankton Biomass Determinations by Indian Ocean Standard Net, Juday Net and Clarke-bumpus Sampler," by D. J. Tranter, Collected Reprint 497, 5 pp., illus., printed. (Reprinted from *Nature*, vol. 198, no. 4886, June 22, 1963, pp. 1179-1180.) Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Cronulla, Sydney, Australia.

The Cultivation of Marine Planktonic Diatoms and Dinoflagellates, by Yu. G. Kabanova, 28 pp., processed. (Translated from the Russian, Trudy Inst. Okeanol., vol. 47, 1961, pp. 203-216.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, Suffolk, England, 1962.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

#### POLLUTION:

"Estimation of the Damage to Fisheries Caused by Pollution," by J. A. Timmermans, article, *Travaux Station de Recherches Groenendael*, Ser. D., no. 34, 36 pp., printed in French. Station de Recherches, Groenendael, Jette, Belgium.

"Mortality Thresholds of Fish in Fly Ash Suspension," by J. M. Thomas, Collected Reprint 493, 1 p., illus., printed. (Reprinted from *The Australian Journal of Science*, vol. 25, no. 9, March 1963, p. 414. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Cronulla, Sydney, Australia.

#### POLYUNSATURATED FATTY ACIDS:

Polyunsaturated Acid in Fish Fat, in the Diet and in the Blood, by O. Nøtvep and B. N. Cyvin, paper presented at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961, printed. Norwegian Institute of Technology, Trondheim, Norway.

#### RADIOACTIVITY:

Ispol'zovanie Radioaktivnykh Izotopov v Rybnom Khozjaistve (The Use of Radioactive Isotopes in the Fishing Industry), by G. S. Karzinkin, 71 pp., printed in Russian. Piskhepromizdat, Moscow, U. S. S. R., 1962. Discusses the use of radioactive isotopes in fish tagging and in the study of fish metabolism. Also covers the use of radioactive potassium, radioactive phosphorus, strontium and yttrium, cerium, iron, cobalt, zinc, iodine, carbon, and sulfur.

#### RED SEA:

"The Israel South Red Sea Expedition," by O. H. Oren, article, *Nature*, vol. 194, June 23, 1963, pp. 1134-1137, printed. St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

"Israel's Red Sea Expedition," by O. H. Oren, article, *Ariel*, Summer Issue 1963, pp. 70-79, printed. Israel Government Printers, Ministry of Foreign Affairs, Cultural Relations Department, Jerusalem, Israel.

#### RESEARCH VESSEL:

"Research Vessel Kalava and Co-Operative Oceanographic Investigations in Indian Waters," by S. Jones, article, *Journal, Marine Biological Association, India*, vol. 1, no. 1, 1959, pp. 1-6, illus., printed. Marine Biological Association, Marine Fisheries Post Office, Mandapam, South India.

#### SALMON:

Abundance, Size, and Age of Red Salmon Smolts from the Wood River System, 1962, by Wilbur Church and Michael Nelson, Informational Leaflet No. 33, 11 pp., illus., processed. Alaska Department of Fish and Game, Support Bldg., Juneau, Alaska. Discusses methods, index of abundance, timing of the migration, and size and age composition. Also included are statistical data on Mosquito Point smolt catches, length frequencies of red salmon smolts, length and age of red salmon smolts, and season's weighted length frequency for 1962.

"The Investigation of Salmon Shark as a Predator on Salmon in the North Pacific, 1960," by Osamu Sano,

article, *Bulletin of the Hokkaido Regional Fisheries Research Laboratory*, no. 24, 1962, pp. 148-162, printed. Hokkaido Regional Fisheries Research Laboratory, Yoichi, Hokkaido, Japan.

Kvichak Salmon Studies: 1962 Spawning Ground Studies, by Wan Soo Kim and R. L. Demery, Circular No. 195, 26 pp., printed. Fisheries Research Institute, University of Washington, Seattle, Wash., 1963.

1959 Pink Salmon Catches in Canadian Waters North of the Convention Area, by A. S. Hourston, Manuscript Report Series (Biological) No. 750, 25 pp., printed. Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1963.

1961 Pink Salmon Catches in Canadian Waters North of the Convention Area, by A. S. Hourston, Manuscript Report Series (Biological) No. 751, 23 pp., printed. Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1963.

"Pitanie Molodi Semgi (*Salmo salar* L.) na Rannikh Stadiyakh Razvitiya pri Vyrashchivani v Prudakh" (The Diet of Pond-Reared Young Salmon (*Salmo salar* L.) in the Early Stages of Development), by I. B. Bogatova, article, *Voprosy Ikhtiologii*, vol. 2, no. 1, 1962, pp. 169-173, printed in Russian. Akademia Nauk SSSR, Ikhtiologicheskaya Komissiya, Moscow, U. S. S. R.

Politics and Conservation, The Decline of the Alaska Salmon, by Richard A. Cooley, 251 pp., illus., printed, \$5, 1963. Harper and Row Publishers, Inc., 49 E. 33rd St., New York, N. Y., 10016. The purpose of this study is to trace the development of Federal policies for the conservation of the Alaska salmon resource in an effort to understand how the policies were formulated and executed, what major forces shaped their ultimate content, and why they have been so ineffective in maintaining the resource at a high level of production. Part one analyzes the environmental setting to determine the major factors which have conditioned the structure of the industry and the resulting pattern of exploitation. The research method used here is primarily statistical and economic analysis. Part two traces the historical development of the Federal conservation program, emphasizing the major issues and conflicts that evolved, the attitudes and activities of the various interest groups, and the public policies that resulted. This is based on a thorough examination of the written record as found in congressional hearings, committee reports, the *Congressional Record*, official reports of government agencies, enacted laws and policy statements, newspapers and trade journals, and the writings, addresses, letters, and reports of persons and organizations involved in the policy-formulating process. Part three presents the conclusions and evaluates their implications in terms of the probable future of the resource under State government administration.

Red Salmon Spawning Ground Surveys in the Nushagak and Togiak Districts, Bristol Bay, 1962, by Wilbur Church and Michael Nelson, Informational Leaflet No. 34, 24 pp., processed. Alaska Department of Fish and Game, Support Bldg., Juneau, Alaska, July 31, 1963. The purpose of the surveys was to pro-

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vide accurate estimates of abundance and distribution of red salmon in the various spawning areas. Such estimates are necessary to both research and management for optimum escapement studies and the attainment of escapement goals. The report discusses survey methods, total population estimates, estimates of spawning ground population in the Nushagak District, distribution of pink salmon in the Nushagak District, and estimates of spawning ground populations in the Togiak District. Also included are statistical tables giving data on comparisons of peak estimates in Wood River Lakes, Igushik Lakes and Lake Nunavagluk, Tikchik Lakes and Nushagak-Mulchatna, and Togiak District; total population estimates of red salmon in the Nushagak District and Togiak District; and pink salmon data for Nuyakuk-Tikchik rivers.

"Rol'kormleniya i Podogreva Vody pri Iskusstvennom Vyrazhchivaniy Lososei v Zapolyar's" (The Role of Feeding and of Warming of the Water in the Artificial Rearing of Salmon above the Arctic Circle), by E. L. Bakshtanskii, article, *Rybnoe Khoziaistvo*, vol. 10, 1961, pp. 15-18, printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U. S. S. R.

#### SALMON AND TROUT:

"Investigation and Management of Atlantic Salmon and Trout. Part I--The Research Program; Part II--The Management Program," articles, *Trade News*, vol. 16, no. 1, July 1963, pp. 3-16, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Part I discusses salmon catch statistics since 1949, salmon research in the Maritime Provinces, salmon research in Newfoundland, trout limnological investigations, and trout research in Nova Scotia. Part II covers adult salmon transfers, proposed construction of new pulp mill, pollution investigations, salmon net mesh size experiment, Indian River diversion, lake investigations, engineering surveys, and construction projects in Newfoundland; Saint John River investigations, salmon tagging in Saint John Harbour, pollution investigations, Annapolis Aboideau fish passage studies, Tuskent River survey, and early-run-late-run experiment in the Maritimes; engineering service including counting fences; and hatchery service.

#### SANITATION:

*The Protection of Wood in Fish Rooms*, by J. J. Waterman, Torry Advisory Note No. 7, 5 pp., printed, 1963. Torry Research Station, Aberdeen, Scotland.

#### SARDINES:

*Existing Regulations for Sardine Fishing in the Mediterranean, GFCM Studies and Reviews No. 20*, 27 pp., processed. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Termi di Caracalla, Rome, Italy, July 1963.

#### SEA GRASS:

"Distribution of the Sea Grass, *Thalassia*, in the United States," by Donald R. Moore, Contribution No. 475, 14 pp., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 13, no. 2, June 1963, pp. 329-342.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

#### SEA LAMPREY:

"Predation of the Sea Lamprey, *Petromyzon marinus*, on the Atlantic Mackerel, *Scomber scombrus*," by Grace L. Orton, article, *Copeia*, no. 3, 1962, pp. 663-665, printed. American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif.

#### SEALS:

*Ssaki Baltyku (Seals of the Baltic)*, by Andrzej Ropelewski, No. 3, 75 pp., illus., printed in Polish. Nakladem Zakladu Ochrony Przyrody, Krakow, Poland, 1952.

#### SHARKS:

"The Role of Olfaction in Shark Predation," by Albert L. Tester, article, *Pacific Science*, vol. 17, no. 2, April 1963, printed. University of Hawaii Press, Honolulu, Hawaii.

"Sharks: Attraction by Low-Frequency Sounds," by Donald R. Nelson and Samuel H. Gruber, article, *Science*, vol. 142, no. 3594, November 15, 1963, pp. 975-977, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C., 20005.

#### SHRIMP:

*Descripcion de la Morfologia Externa e Interna del Langostino con Algunas Aplicaciones de Indole Taxonomica y Biologica*, HYMENOPENAEUS MULLERI (Bate), Crustacea, Fam. Penaeidae (Description of the External and Internal Morphology of the Shrimp with Some Applications of Taxonomic and Biological Class), by Enrique E. Boschi and Victor Angelescu, 74 pp., illus., printed in Spanish with English summary. Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Departamento de Biologia, Buenos Aires, Argentina, 1962.

*Investigations of Brine Shrimp*, by Donald C. Hales, 1 vol., printed, 1957. Utah Fish and Game Department, Salt Lake City, Utah.

*La Pêche Belge aux Crevettes (The Belgian Shrimp Fishery)*, by E. Leloup and Ch. Gilis, Special Meeting on Crustacea No. 3, 4 pp., illus., processed in French. International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark, 1962.

*Shrimp Landings and Production of the State of Texas for the Period 1956-1959, with a Comparison with Other Gulf States*, by Gordon Gunter, 11 pp., illus., printed. (Reprinted from *Publications of the Institute of Marine Science*, vol. 8, 1962, pp. 216-226.) Institute of Marine Science, Port Aransas, Tex.

*Studies on Frozen Storage of Prawns, IPFC Occasional Paper 1963/2*, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1963.

The following publications, presented at a Special Meeting on Crustacea held in 1962, are available from the International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark:

*Les Crevettes Profondes de la Region Atlantique Ibero-Marocaine Repartition Bathymetrique et Geographi-*



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que, *Importance Economique (Deep-Water Shrimps of the Atlantic Ibero-Moroccan Region, Bathymetric and Geographic Distribution and Economic Importance)*, by Cl. Maurin, Special Meeting on Crustacea No. 8, 4 pp., processed in French.

*The Deep-Sea Prawn (PANDALUS BOREALIS) in Icelandic Waters*, by Aalsteinn Sigrosson and Ingvar Hallgrímsson, Special Meeting on Crustacea No. 28, 11 pp., illus., processed.

*Deep-Sea Prawns and the Prawn Fishery in Greenland Waters*, by Erik Smidt, Special Meeting on Crustacea No. 1, 5 pp., illus., processed.

*Further Results of the German Shrimp Industry*, by P. F. Meyer-Waarden and K. Tiews, Special Meeting on Crustacea No. 35, 13 pp., illus., processed.

*Methods to Improve the Yield of the Dutch Shrimp Fisheries*, by R. Boddeke, Special Meeting on Crustacea No. 33, 5 pp., processed.

*The Pandalus in the Skagerak (Length, Growth and Changes in the Stock and Fishery Yield)*, by Aage J. C. Jensen, Special Meeting on Crustacea No. 37, 4 pp., illus., processed.

*Summary, Dynamics of a Penaeid Shrimp Population and Management Implications*, by Joseph H. Kutkuhn, Special Meeting on Crustacea No. 14, 5 pp., illus., processed.

#### SHRIMP FARMING:

"Problems of Sea Farming Aren't All Technical," by S. F. Manning, article, *National Fisherman/Maine Coast Fisherman*, vol. 44, April 1963, pp. 22-23, printed. Journal Publishing Co., Belfast, Me.

#### SMALL BUSINESS MANAGEMENT:

*Analyzing Food Brokers' Costs and Margins*, by Frank Johnson, *Management Research Summary*, 2 pp., processed. Small Business Administration, Washington, D. C. 20416, 1963. Food brokers selling a variety of products averaged a higher commission rate than those specializing in sales of a single commodity. Salaries and auto and travel costs accounted for more than 80 percent of brokers' expenses. Mergers and acquisitions have been occurring at increasingly rapid rates.

*Counseling Affiliated Food Retailers; a Manual for Food Wholesalers*, by Robert L. Bull, no. 31, 220 pp., \$5. Food Distribution Section, University of Delaware, Newark, Del., 1963.

*The Effect of Tight Money on Small Business Financing*, by Deane Carson, *Management Research Summary*, 2 pp., processed. Small Business Administration, Washington, D. C. 20416, 1963. When money is tight, discrimination against small firms in the bank-loan market may take two forms. Banks may reduce the flow of loanable funds to small firms in order to maintain or expand the flow to larger firms. Or they may raise interest rates proportionately more on small-business than on large-business loans.

*Factors in Small Business Success or Failure*, by Edward J. Chambers and Raymond L. Gold, Man-

agement Research Summary, 4 pp., processed. Small Business Administration, Washington, D. C. 20416, 1963. The businessmen taking part in the study generally agreed that success in a small business is likely to come to the man who has the following traits: he works long, hard hours; he has the ability to recover quickly and press on in the face of a setback; he is competitive in attitudes and actions; he is willing to take a minimal profit from his business until he achieves a firm financial position; and he masters the technical and social skills his operation require. The data suggest that there is a "take-off" or a "slide" point in a businessman's career beyond which cumulative experience of success or failure affects his motivation.

*Financial Planning in Closely Held Businesses*, by Joseph J. Geraci, *Management Aid for Small Manufacturers* No. 156, 4 pp., processed. Small Business Administration, Washington, D. C. 20416, September 1963. Financial planning can give a closely held company two things: (1) daily operating strength or business nutrition, and (2) business continuation--an existence when the owner-manager is no longer in the business through retirement, death, or some other reason. This report discusses why these two elements are especially needed in closely held firms. It describes pitfalls which such companies must avoid and outlines what should be included in their financial planning.

*Food Brokers' Sales and Merchandising Programs*, by Frank Johnson and Robert Bull, *Management Research Summary*, 2 pp., processed, 1963. Small Business Administration, Washington, D. C. 20416. One of a series dealing with the activities of food brokers in the United States. Discusses: (1) agreements between brokers and the manufacturers they represent (called principals); (2) basic operating relations; (3) sales management problems; and (4) brokers' retail merchandising activities.

*How Small Firms Handle Their Legal Problems*, by Sumner Marcus and Edward J. Chambers, *Management Research Summary*, 2 pp., processed. Small Business Administration, Washington, D. C. 20416. The manager of a small business, according to the report, should consider carefully whether his firm would benefit from the following practices: (1) periodic consultation with his lawyer to determine whether legal considerations dictate changes in any of the firm's practices; (2) an arrangement with his lawyer that would ensure his awareness of legal problems; and (3) limitation of his dependence on nonlegal advisors to matters that are clearly within their areas of specialization and that do not call for advice they are not qualified to give.

*Improving Office Procedures in Food Brokers' Firms*, by Daniel J. Bartz, *Management Research Summary*, 2 pp., processed. Small Business Administration, Washington, D. C., 20416. Work simplification is increasingly important to food brokers because of (1) the need to allocate more time to retail merchandising and sales management, and (2) the many records and reports required for company use and for compliance with Government regulations. The five steps in work simplification are: select the job to be improved; get the facts; challenge every job detail; find a better way to do the job; and install the new method.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

**Management Counseling of Small Business**, by Karl Morrison, Management Research Summary, 2 pp., processed. Small Business Administration, Washington, D. C. 20416, 1963. Findings showed that management counseling can improve the effectiveness of small businesses; while several sources of such counsel are available, no great use is made of them; and some of the barriers to the use of management counsel are deeply imbedded in the very nature of these small firms. It was suggested that a method should be developed for certifying management consultants, similar perhaps to that for public accountants; and small businessmen with identical problems should jointly employ consultants to provide specific services.

**Management Counseling of Small Manufacturing Firms**, by C. F. Dunham, W. E. Green and R. S. Downer, Management Research Summary, 2 pp., processed. Small Business Administration, Washington, D. C. 20416, 1963. The need for counseling involves such areas as: (1) adaptation of the available production facilities to more efficient operations; (2) motion and methods analysis and plant layout studies; (3) design of special equipment; and (4) advice on market analysis, advertising campaigns, sales promotion, sales forecasting, methods of selecting and training salesmen and other personnel, compensation plans, and selection of distributors. The type of counseling most needed, however, is that based on a thorough analysis of each firm's over-all situation--an analysis that will locate and define the real problem areas.

**U. S. Small Business and the Latin American Market**, by Carl H. Madden, Management Research Summary, 2 pp., processed. Small Business Administration, Washington, D. C. 20416, 1963. The most pressing need of small United States firms dealing with the Latin American market is for more services such as market information; overseas contacts; tariff, shipping, and other technical export and import information; data on pricing and quality of products; and translation of literature and correspondence. Many small businesses need information and help in learning how to analyze foreign markets intelligently, how to sell in those markets, how to ship and document their goods, and how to collect their money. The need can be met in part by cooperative effort and private organization of export activities. But where such efforts do not meet the need, its importance justifies newly planned Government services.

#### SMELT:

**A Revision of the Smelt Family, OSMERIDAE**, by D. E. McAllister, Bulletin No. 191, 53 pp., printed. National Museum of Canada, Ottawa, Canada, 1963.

#### SOUTH AFRICA REPUBLIC:

**Netting Profits--Special Survey of the Inshore Fishing Industry**, Supplement to the Financial Mail, June 21, 1963, 51 pp., illus., printed. Financial Mail, Johannesburg, South Africa Republic. A comprehensive survey of the expanding inshore fishing industry of South Africa and South West Africa. Covers markets, production, leading companies and personalities. The industry's chief problems are given as reliance on too narrow a base (mainly pilchards

and spiny lobsters), inadequate fishing harbors, and strong Russian and Japanese competition.

#### SPAIN:

**"En 1962 Excedio Tambien Nuestra Pesca el Millon de Toneladas"** (In 1962 Our Fishery Again Exceeded One Million Tons), article, Boletín de Información, no. 58, July 1963, pp. 8-16, printed in Spanish. Sindicato Nacional de la Pesca, Paseo del Prado, 18-20, 6ª Planta, Madrid, Spain. Presents statistical tables giving data on landings by the Biscayan fleet in Sierra Leone waters, quantity and value of national fishery landings, landings by species, landings of cod, landings by freezer vessels, and landings by coastal fishermen and on the high seas by provinces. Also presents data on tuna landings, landings of the principal fishery provinces, destination of landings by coastal fishermen and from the high seas, average prices of some species in 1962 and differences in value and quantity with the preceding year, and provincial fishery imports by species.

**"Presente e Futuro da Industria Conserveira Galega"** (Present and Future of the Galician Canning Industry), by Francisco Lopez Gapont, article, Conservas de Peixe, vol. XVII, no. 208, July 1963, pp. 20-22, printed in Portuguese. Sociedade da Revista Conservas de Peixe, Lda., Regueirao dos Anjos, 68, Lisbon, Portugal.

#### SPINY LOBSTERS:

**Essais de Pêche à la Langouste sur les Bancs et le Plateau Continentale de l'Amerique Tropicale** (Experimental Fishing for Spiny Lobsters on the Banks and the Continental Shelf of Tropical America), by R. Letaconneux, Special Meeting on Crustacea No. 9, 2 pp., processed in French. International Council for the Exploration of the Sea, Charlottenlund Slot, Denmark, 1962.

#### SPOILAGE:

**Spoilage of Fish and Crustaceans, Rapid Determination of Volatile Ammonia by Accelerated Microdiffusion**, by W. Vyncke and E. Merlevede, 14 pp., illus., printed in English with Dutch, French, and German summaries. (Reprinted from Archives Belges de Medecine Sociale, Hygiene, Medecine du Travail et Medecine Legale, no. 3, March 1963, pp. 147-160.) Laboratory of Industrial Hygiene, University of Ghent, Ghent, Belgium. A simple method for measuring volatile ammonia in fish and crustacea as an index of spoilage is described. It is based on the separation of ammonia by accelerated microdiffusion followed by spectrophotometrical measurement of the color produced with Nessler reagent. Four series of experiments with crustacea are added to demonstrate the possibilities of this method. Results show that volatile ammonia correlates well with total volatile bases (TVB), trimethylamine (TMA), and sensory test. It gives the same information about spoilage as TVB and TMA and is valuable especially when used for comparative experiments, and the study of preservatives such as benzoic acid and sodium chloride. Speed, simplicity, and a minimum of materials and products are the great advantages of this microdiffusion method.

#### SQUID:

**Observations on Bioluminescence in Ommastrephes pteropus** (Steenstrup, 1855), with Notes on Its Occur-

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rence in the Family Ommastrephidae (Mollusca: Cephalopoda)," by Clyde F. E. Roper, Contribution No. 476, 11 pp., illus., printed in English with Spanish summary. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 13, no. 2, June 1963, pp. 343-353.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

#### SWEDEN:

"Aktuella Ekonomiska Problem inom Fisket" (Actual Economic Problems in the Fishery), by Ingemar Gerhard, article, *Svenska Vastkust Fiskaren*, vol. 33, no. 13-14, July 15, 1963, pp. 336-337, printed in Swedish. Svenska Vastkustfiskarnas Centralforbund, Goteborg, Sweden.

"Fisket Ar 1962 Gav Hygglig Inkomst men Blev ett Odeasar for Raktralarare" (The 1962 Year of Fishing Did Not Yield Too Bad an Income but it Was a Fatal Year for Shrimp Trawling), article, *Svenska Vastkust Fiskaren*, vol. 33, no. 13-14, July 15, 1963, pp. 328-334, illus., printed in Swedish. Svenska Vastkustfiskarnas Centralforbund, Goteborg, Sweden.

#### SYMBIOSIS:

"Symbiosis: On the Role of Algae Symbiotic with Hydra," by Leonard Muscatine and Howard M. Lenhoff, article, *Science*, vol. 142, no. 3594, November 15, 1963, pp. 956-958, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

#### TARIFFS:

Seventh Supplemental Report, Tariff Classification Study, 11 pp., processed. Secretary, United States Tariff Commission, Washington 25, D. C., August 14, 1963. The seventh supplemental report sets forth changes made by the Commission in certain provisions of the Tariff Schedules of the United States identified in the Commission's public notice of July 11, 1963 (28 F. R. 7239). The report also contains an explanation of such changes and an appendix which includes written views and oral testimony received by the Commission. No fishery or fishery allied items included.

#### TRANSPORTATION:

"Conditions d'Emploi de l'Avion pour le Transport des Denrees Perissables" (Conditions for Use of Aeroplanes for the Transportation of Perishable Foodstuffs), article, *Bulletin, Institut International du Froid*, vol. 41, no. 1, 1961, pp. 302-308, printed in French with English summary. Institut International du Froid, 177 Boulevard Malesherbes, Paris XVII, France.

"Railroads Offer Incentive Rates to Induce Frozen Food Freight," article, *Quick Frozen Foods*, vol. XXVI, no. 1, August 1963, pp. 311-312, printed. E. W. Williams Publications, Inc., 1776 Broadway, New York 19, N. Y.

Study of Rates on Fish and Fishery Products Via Rail, Motor, Water, and Express Including the Development of Applicable Rates and Rate Levels, 57 pp., illus., processed. General Services Administration, Transportation and Communications Service, Washington, D. C. (Available from Transportation

Section, U. S. Bureau of Commercial Fisheries, 400 Wyatt Bldg., Washington, D. C. 20005.) A transportation rate study showing various freight rate systems and individual rate relationships for fishery products. The study is composed of an exhibit divided into four parts plus an explanatory statement. The exhibit shows origin, destination, commodity, transportation tariff commodity description, rates, tariff authority, routing, minimum weights, and type of transportation. Part I covers imports, exports, and cross trade. Part II lists intercoastal steamship, and domestic rail, motor and REA express information. Part III contains the rates and charges applicable from major Alaska ports to Seattle via Alaska Steamship Company, for subsequent movement beyond Seattle by intercoastal carriers. Part IV shows charges assessed by port terminal operators at major United States ports for handling fishery products. The study will be useful for comparing the relationships of transportation costs between competitive points and for determining which companies perform the services and which tariffs are applicable between these points. The rates shown were effective during April, May and June 1962. Individual rates may have changed since then, and for this reason, the study should not be used as a reference for current rates.

#### TRAWL FISH:

Glossary of Common Trawl Fish, by Howard D. Tait, Informational Leaflet No. 15, 5 pp., processed. Alaska Department of Fish and Game, Support Bldg., Juneau, Alaska, 1962.

#### TRAWLING:

"Hacktralare, Flyttralar, och Tralsonders" (Stern Trawling, Floating Trawling, and Bottom Trawling), article, *Svenska Vastkust Fiskaren*, vol. 33, no. 13-14, July 15, 1963, pp. 338-340, illus., printed in Swedish. Svenska Vastkustfiskarnas Centralforbund, Goteborg, Sweden.

"La Peche Industrielle" (Commercial Fishing), by F. Dorville, article, *Revue Maritime*, no. 183, 1961, pp. 1563-1577, illus., printed in French. Departement des Peches Maritimes, Societe MacGregor-Comarain, Paris, France.

#### TUNA:

"Observations on the Spawning of Four Species of Tuna (*Neothunnus macropterus*, *Katsuwonus pelamis*, *Auxis thazard* and *Euthynnus lineatus*) in the Eastern Pacific Ocean, Based on the Distribution of Their Larvae and Juveniles," by Witold L. Klawe, article, *Inter-American Tropical Tuna Commission Bulletin*, vol. VI, no. 9, 1963, pp. 449-540, illus., printed in Spanish and English. Inter-American Tropical Tuna Commission, La Jolla, Calif.

Synopsis for F. A. O. Species and Stocks Thesaurus of Data on THUNNUS THYNNUS Maccoyi (Castelnau), by J. P. Robins, 36 pp., illus., processed. Commonwealth Scientific and Industrial Research Organization, Division of Fisheries and Oceanography, Cronulla, Australia, 1962.

#### TURKEY:

Balik ve Balikcilik, vol. XI, no. 8, August 1963, 35 pp., illus., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balikcilik Mudur-

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lugu, Besiktas, Istanbul, Turkey. Includes, among others, articles on: "The Production of Fish Oil Which Are Used in Industry by the Action of Sulphur Compounds;" "Izui Line Hauler in the Marmara Sea," and "The Role of Lights in the Kingdom of Fish and Light Fishing."

#### UNITED KINGDOM:

Sea Fisheries Statistical Tables, 1962, 48 pp., printed, 5s. (about 10 U.S. cents). Ministry of Agriculture, Fisheries and Food, London, England, 1963. (Available from Her Majesty's Stationery Office, York House, Kingsway, London WC2, England.) For the first time in many years, United Kingdom landings of fresh fish increased and 1962's total of 15,718,000 cwt. was about 804,000 cwt. higher than that in 1961. Wholesale prices, however, dropped and the total value realized in 1962 was £48,862,000 compared with £49,258,000 in the previous year. The value of shellfish continued to rise to £2,461,000. This report consists of statistical tables showing the quantity, value, and average value of fish and shellfish landed in England and Wales by species, region, and method of capture. The different kinds of fish are divided into three main groups: demersal, pelagic, and shellfish. Also includes data on number of fishermen and fishing vessels employed as well as quantity and value of exports and imports, 1961-1962, by kinds and countries.

White Fish Authority, Annual Report and Accounts for the Year Ended 31st March 1963, 59 pp., illus., printed, 3s. 6d. (about 50 U.S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, June 14, 1963. Discusses the activities and functions of the White Fish Authority for the fiscal year ending March 31, 1963, its income, expenditures, and fishery loans. Includes sections on production of fishery products; marketing and distribution; research and experiments undertaken; training courses for fishermen; and investigations into the costs and earnings of inshore fishermen. Also includes statistical tables on distribution of trawlers; rebuilding of fleets; interest rates charged by the Authority on loans; a summary of white fish imports; and rates of special subsidy.

#### U. S. S. R.:

Biology of the Seas of the U. S. S. R., by L. Zenkevitch, 955 pp., illus., printed, \$25, 1963. Interscience Publishers, 440 Park Ave. S., New York 16, N. Y. No country in the world possesses such an abundance and variety of bodies of water as the U. S. S. R. There are in all, 14 seas comprising 5 percent of the total area of the world's water, and their composition ranges from full marine salinity to the brackish. There is an astonishing variety of physiogeographical conditions, which in turn presents a great complexity of flora and fauna, forming a rich subject for scientific investigation. This volume contains a great deal of scientific information, much of it arranged in illustrations, graphs, and tables. It is divided into three areas under headings of The Northern, Southern, and Far Eastern Seas of the U. S. S. R. The Northern Seas are the Barents, White, Kara, Laptev, Chukotsk, and Baltic. The Southern Seas are the Black, Azov, Caspian, and Aral. The Far Eastern Seas are Japan, Okhotsk,

and Bering. In each section the principal aspects of the area are first discussed; general characteristics, zoogeography, hydrological and geological conditions and, where applicable, its commercial productivity. Each sea is then examined in a separate chapter in relation to its particular characteristics, flora and fauna, chemistry, physical geography and geology, and the history of its exploration. Detailed information on the biology and ecology of fish and shellfish species in each sea is included. In addition to its contribution to methodology and approach, the work will prove invaluable as a source of information about areas with which the western biologist has no direct contact.

Management of Fisheries and Dynamics of Fish Populations, USSR, OTS 63-31056, 49 pp., processed, \$1.25. Office of Technical Services, U. S. Department of Commerce, Independence Ave. and Ohio Dr. SW., Washington, D. C. 20235, June 18, 1963.

Most Promising Fishing Regions According to Data of Oceanological Research USSR, by D. Ya. Berenbeym and A. N. Probatov, OTS 63-31089, 10 pp., illus., processed, 50 cents. Office of Technical Services, U. S. Department of Commerce, Independence Ave. and Ohio Dr. SW., Washington, D. C. 20235, June 21, 1963.

Translations from Voprosy Ikhtologii (Problems of Ichthyology), no. 1, 1962, OTS 63-31085, 75 pp., illus., processed, \$2. Office of Technical Services, U. S. Department of Commerce, Independence Ave. and Ohio Dr. SW., Washington, D. C. 20235, June 20, 1963.

#### VESELS:

Mechanization of Fishing in Andhra Pradesh, IPFC Occasional Paper 1963/4, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1963.

Progress of Mechanization of Fishing Boats in West Pakistan, IPFC Occasional Paper 1963/3, printed. Indo-Pacific Fisheries Council, FAO Regional Office for Asia and the Far East, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand, 1963.

#### VOCATIONAL TRAINING:

Report on the Educational Program for Fishermen of the Maritime Provinces, 17 pp., printed. Extension Department, St. Francis Xavier University, Antigonish, Nova Scotia, 1963.

System of Professional Training in the Fishery Industry: Lecture No. 7 of the Seminar and Study Tour for Fishery Administration from Indo-Pacific and Mediterranean Regions, September-October 1961, Moscow, 22 pp., printed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Vocational Training and Certificates of Competency, 2 parts, printed. International Labour Organisation, Committee on Conditions of Work in the Fishing Industry, Geneva, Switzerland, 1962.



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## FISHERY MOTION PICTURE



The following motion picture is available only from the source given in the listing.



Watermen of Chesapeake is a sound-color motion picture on the economic and recreational importance of the Chesapeake Bay and will be available for free showing to the public.

This was announced simultaneously on September 22, 1963, by the U. S. Department of the Interior and the cooperating agencies, the Maryland Department of Tidewater Fisheries, and the Virginia Commission of Fisheries.



A Chesapeake Bay sail-powered oyster dredging vessel. These picturesque vessels have worked the natural beds of Chesapeake Bay for many years.

Chincoteague, Va. There also are visits to Tangier and Smith Islands, where traces of the old English language still remain.

Production of Watermen of Chesapeake was supervised by the Department's Bureau of Commercial Fisheries, Fish and Wildlife Service.

Prints of the 16-millimeter film soon will be available on a free-loan basis at Bureau of Commercial Fisheries film libraries in many parts of the country. Inquiries should be sent to the Bureau of Commercial Fisheries Film Library, U. S. Department of the Interior, Box 128, College Park, Maryland 20740.

The 28-minute film, Watermen of Chesapeake, shows the impact of the Bay and its resources on a large segment of America, from early days to the present.

The picture portrays the activities of fishermen in their harvest of clams, oysters, crab, flounder, and other marine food and shows the importance of the Chesapeake Bay to such sports as duck hunting, water skiing, and boating.

The Department said production of the film was possible only because of the assistance of the Maryland and Virginia fishery agencies.

Highlights of the film include the operation of America's only sail-powered oyster fleet, the widely known crab derby at Crisfield, Md., and the penning and auctioning of the world-famous wild ponies at

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